



COLOUR
IN
LANDSCAPE
PAINTING

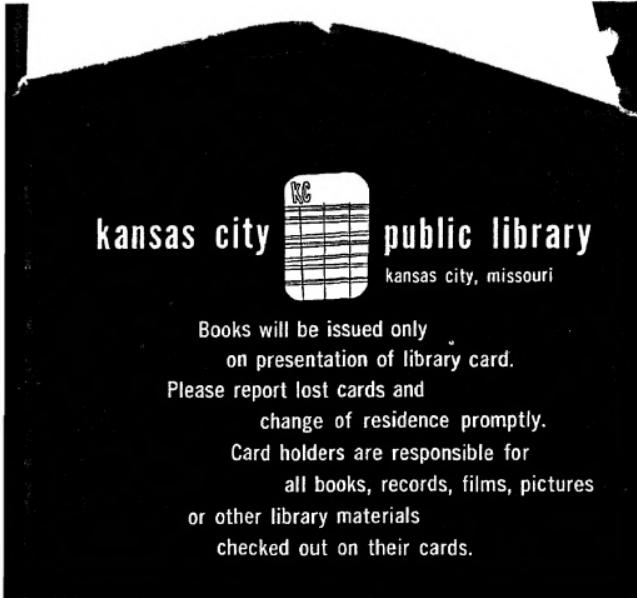
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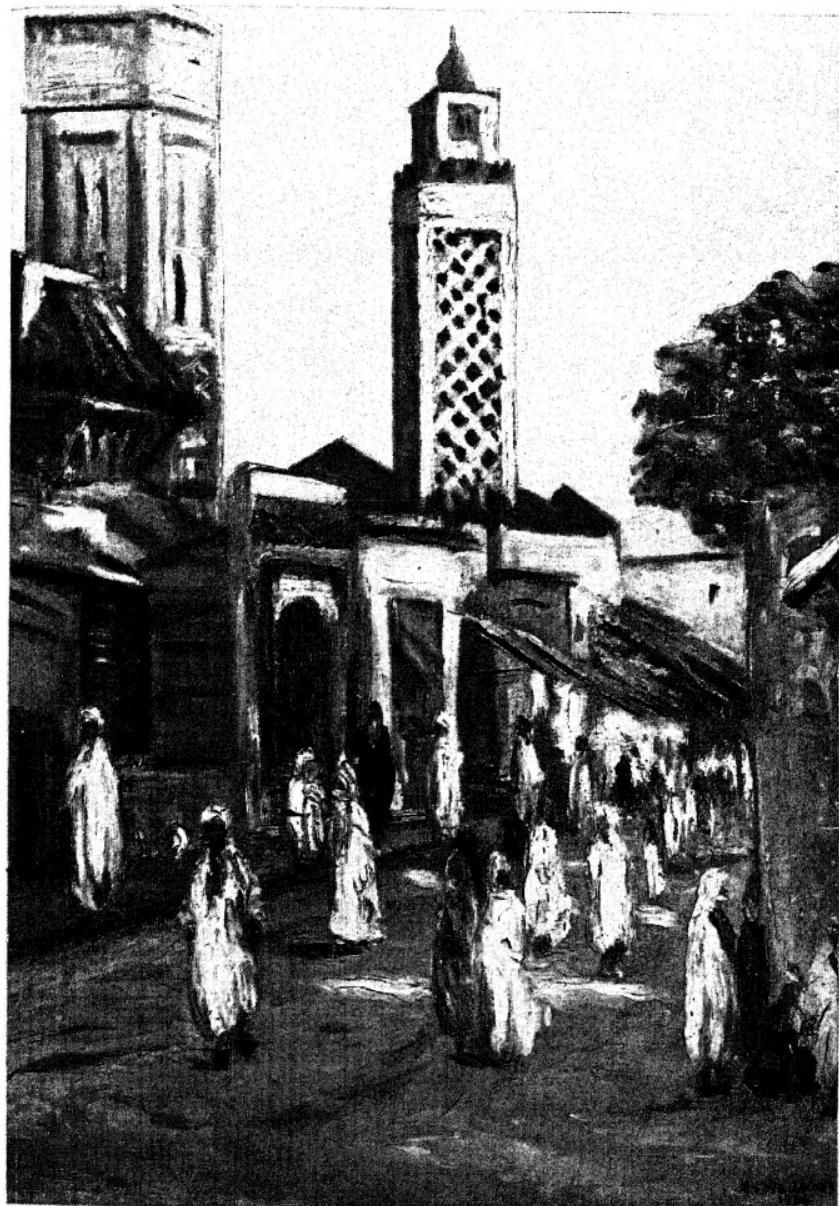




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COLOUR IN LANDSCAPE PAINTING



A STREET IN FEZ, MOROCCO

MICHEL JACOBS, F.R.S.A.

COLOUR IN LANDSCAPE PAINTING

by

MICHEL JACOBS

AUTHOR OF:

*The Art of Colour, The Art of Composition,
The Study of Colour, Colour in Portrait Painting,
Epigramus of an Ignoramus*

PRIMATIC ART COMPANY
P. O. BOX 186 • RUMSON, N. J.

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Printed in the United States of America
American Book-Stratford Press, Inc., New York

DEDICATION

To have the joy of life on earth;
To see the sky above;
To see the spring bring forth new birth;
To have all children's love;
To see the hills in violet haze;
To see the blessed sun;
To have my eyes that I can gaze;
To see the streamlets run;
To see the colours here below;
To see the bees and birds;
To feel the gentle zephyrs blow;
To know these are but simple words;
To give my thanks to God

APPRECIATION

I wish to thank Mr. Harvey Glover of the Sweeney Lithograph Company for the colour reproductions in this book done under his new process called Glo-vure, which shows very brilliant colour reproduction.

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OUR LIVES ARE

but a sacrifice; we toil
and spin to gain a place
in the universe. But if we
bequeath to posterity
some beautiful thought,
some worthy thing, and
leave behind the fruits
of our labour to help
those who follow to make
the world more beautiful,
we shall have fulfilled
our destiny.

Michel Jacobs

INTRODUCTION



ANY people all over the world who have bought my other books, *The Art of Colour*, *The Study of Colour*, *The Art of Composition*, and *Colour in Portrait Painting*, have requested me to write a book devoted to *Colour in Landscape Painting* based on my colour theory; so I have decided to take up my pen again and write more pertinent and detailed information about painting landscapes. I hope it will be useful to the professional landscapist and amateur. This book is not just another book on landscape painting, but a system of colour interpretation based on science, the effect of light on colour.

The term "modern art" is a misnomer, an anachronism, because in all ages we have had modern art. Rembrandt, Velásquez, El Greco, Goya, etc., were supposed to be "modern" artists in their time because they broke away from the old traditions. Perhaps I can consider myself a "modern" in colour because I have broken away from the tradition of the old Brown's Sauce School. I am opposed to those students or artists who do not have the intellect or are too lazy to study the laws of nature and who put forth crude, unsightly creations and call them "modern art."

It is not necessary to follow nature exactly, because it might become photographic, but all works of art must express an idea, a feeling of elation to the artist and to the beholder alike.

It is not necessary always to portray things of beauty; sometimes horror and ugliness, such as the gargoyles of Notre Dame are beautiful in their ugliness.

However, to my way of thinking, a true artist will study God's work before he tries to make himself a creator.

In this present work I have tried only to give you ideas how to arrive at brilliancy and pure colours. This does not mean that the colours must always be brilliant. As you will see by some of the illustrations I have used grays and tonal effects which perhaps are not exactly like nature but are inspired by nature to give a certain mood.

I have tried to show you light on colour as nature uses it. Also I have tried to teach here the painting of trees, grass, water, rocks and other things that go into a landscape.

In *The Art of Colour* different activities in arts and crafts were

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studied, including a chapter or two only on landscape painting. It would be a good idea for those who get this book to study *The Art of Colour* at the same time, because there are many things pertaining to colour in landscape painting which are explained in that book and, of course, elaborated in this new book! It contains many suggestions to the landscape painters about how to handle oil colours. Many painters use what I call mud colours, such as burnt sienna, yellow ochre, light red, indian red, raw umber, terra vert, and worst of all black, which never should be used in landscape painting. All these "mud" colours have no scintillation and the colour itself can be made by mixing the complementaries. When these complementary colours are mixed it is always a good idea not to mix them thoroughly and thereby get a scintillation and a vibration and a more interesting colour. For example, if the foreground earth looks brown, if you used a raw umber or burnt sienna it would be a flat and uninteresting tone; but if you mixed a red with the blue or an orange with blue-violet or a yellow with violet to get the same colour the result would be much more interesting and show more scintillation.

The same way with grass in the foreground. If you used a terra vert, which is a dull green, it would not have the sparkle which grass has, even in the foreground, but if you used a yellow-green mixed with a little of its complementary purple, or a blue-green mixed with its complementary scarlet, you would have grass which shows a scintillating quality.

This applies also, of course, to colours in the distance or middle distance, which is explained later on. This has more blue-violet, violet or blue, as the colours go colder as they recede.

My previous book, *The Art of Composition, Simplified Dynamic Symmetry*, is used throughout this new book. In the first book only the rudiments are explained but in this new book the application of these rudiments is used and shows the advantage of the Greek form of composition with many charts and illustrations.

The Study of Colour is intended to be used by schools to teach the students colour, and the exercises to train the eyes to see colour and the combination of colours as well as to get originality in composition.

Most of us were born with two eyes but few are able really to see the colours with which nature has endowed this beautiful earth. We take for granted and say "red trees," "gray slate roofs," and even

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"white as snow." But a red tree will have perhaps purple or crimson shadows with blue-green with white highlights reflected from the sky, a gray slate roof may be blue-violet or green depending on the surroundings and the time of day, and snow always reflects the sky and is lighted by the rays of the sun, depending on the time of day. It may be yellow, orange, or red and the shadows may be violet, blue-violet or blue-green. There will be more later on in the chapter on the colour of shadows and light.

It is the purpose of this book not to tell you how to see things but what to look for and judge with your own eyes. I see so many pictures of trees which show that the artist did not care or did not know the way a tree grows. Some of these pictures look like a bunch of spinach or a bundle of sticks.

Grass is not just plain green, it has lots of other colours broken into it and the colour changes according to whether it is in the foreground, distance or middle distance. The earth is not just a brown mud colour but reflects the sky and is lighted by the colour of the sun, depending on the time of day. If the artist wishes to portray nature as she really is and not as his preconceived immature notions think she is, he should know the laws of nature and the laws of the spectrum and the laws of optics. With this knowledge he can originate, if he wishes, and not copy nature exactly.

One of the principal things to keep in mind in starting a painting is that you can get so much more purity of colour by painting in the cold colours first and the warm colours on top. If you reverse this process you will only get mud and no luminosity whatsoever. This also applies to gray or cloudy days as well.

Simultaneous contrast has a great deal to do with what the colour looks like in nature and it is my contention that pictures of landscapes should look as though you were looking through a window. As I have said in my other book, "Art is nature seen through personality and personality is born of observation plus information."

Modern art, I think, should be an artist's interpretation of what he knows of nature. If the modern painter has knowledge he will paint something other people will understand, but if he paints without knowledge he simply makes a picture very foolish indeed. It is not necessary to follow nature in design or colour but it should be based on a knowledge which is understandable to others besides him-

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self. He may try only to make a decoration in abstract design, as you will see that I have done myself in many of my coloured illustrations in *The Art of Colour*, especially in the small charts of colour combinations.

CHAPTER I: COLOUR THEORY



COLOUR in Landscape Painting is designed to show the effect of light on colour. In the old "Brown's Sauce School" colours were painted in what was called local colours. For example, a red tree in the autumn was painted on the light side, red with white, and on the dark side the shadows were painted with raw umber, burnt sienna, van dyke brown or black. But nature does not work that way. When an object is lighted by either the sun or gray sky, the shadows go *toward* the complementary colour. Taking the red tree again, the light side of the red tree might be an orange, the half-tone red and the shadow crimson or purple, depending on how much light was on the tree.

I refer the reader to the spectrum charts and colour mixing charts in *The Art of Colour* to guide the landscape painter so that he may know the different colours and their complementaries for mixing his paints and to know the colours of the shadows as they go *toward* their complementary.

The primary colours of the spectrum are red, green and violet according to all scientific findings. That is, white light can be divided into these three primary colours. If you see an object which is red it means only that the pigment, dye or object is able to reflect the red of the spectrum, and if you see an object which looks green it means that that particular pigment or object has the property of reflecting back to you the green rays of light and likewise the violet.

If you see an object which is yellow it means that that particular object has the property of reflecting back to your eyes the red and green rays of light simultaneously, so you see yellow. If you see something that looks blue it means that that particular object has the ability to reflect back the green and violet rays simultaneously and so you get a sensation of blue. If you see an object which appears crimson it means that that particular object has the ability to reflect back to your eyes the red and violet rays simultaneously: so that the combination of two colours of the spectrum produces the so-called primaries of pigments which are yellow, blue and crimson (erroneously many times called red). This principle is used in colour photography, coloured movies, and coloured television; in fact, in all scientific activity.

If you mix these pigmentary primaries, you will get the interme-

diate tones which will reflect back to your eyes the colours orange, yellow-green, blue-green, blue-violet, purple and scarlet.

In *The Art of Colour* I explain the colour theory in detail and I will not attempt in this book to reiterate what I have said there, only to state that the colours of the spectrum are produced in oil by paints. Remember these are not colours but only pigments which reproduce light on colour. The black and white value is arrived at by neutralizing these colours with their complementaries. The complementary of a colour is the direct opposite in the spectrum chart.

In this system the colour of the shadow goes toward the complementary, depending on how much light there is on the object or how brilliant the object is, of course, influenced by the surrounding colour or colours which is called simultaneous contrast.

It is a known fact that if you look at an object which appears red in a bright light for any length of time and move the object away you will see the after image, which is the complementary colour blue.

I have gone into this in detail in *The Art of Colour* and in *The Study of Colour* and I sincerely hope that those who have this book will study these earlier books to get colour combinations and to understand the effect of light on colour. This applies whether you are a conventional painter, a naturalist, a so-called modern painter or a surrealist painter.

I have always been impressed with the works of my old friend, John F. Carlson, and his book, *Elementary Principles of Landscape Painting*. It contains a lot of knowledge for the academic type of painting but his chapter on colour is misleading. He treats colour only aesthetically, not constructively nor informatively. He does not tell how to paint colour or the effects of colour.

In the first place, his palette with the colours he recommends are not permanent, especially prussian blue, which turns green with age, and the use of lead white with the cadmiums. All the vermilions will turn those colours gray in time, and his use of the earth colours and ochre and blacks give only a dull, non-scintillating colour, which I have explained, although he does take some of the things I have suggested in *The Art of Colour*.

His medium of using copal varnish is a mistake because copal varnish "blooms" in time. Mastic varnish is much better varnish to use. Also the use of linseed oil I cannot agree with because poppy oil is much better and does not turn black. In his book, *Elementary Prin-*

ciples of Landscape Painting, he has been kind enough to give me credit as having written a good book on colour, and in turn I would compliment him on teaching the academic type of landscape painting except for colour, although he mentions the Young-Helmholtz theory of colour and my theory and practice of colour. He insists on treating paint, pigments and dyes as colours, whereas I have said these are only substances or things which reflect the rays of light. The only guide should be the effect of light on colour, using pigments to represent the colours of the spectrum.

CHAPTER II: COLD COLOURS FIRST



HE first thing to do in painting a landscape is to make a design, using nature but not necessarily copying it exactly. A knowledge of the way things grow and the colour especially—one colour against the other in simultaneous contrast—should be well understood. It is a good idea to start with the skyline, drawing in the silhouette, so to speak, of the way the hills or the trees in the distance form against the sky.

The middle distance should be drawn in, being careful, of course, to note the kind of trees and the way they look in the middle distance. Then the middle distance itself should be drawn in more or less poster design, one mass against the other and as simple as possible.

Then the foreground. If you are in doubt about your drawing you may use charcoal or pencil but it would be much better if you made the first drawing with a blue-green or blue, very light in colour by the use of turpentine, increasing the depth or fullness of colour as you come forward.

The next thing to do would be to paint the sky in the cold colours only. We hear people say “a blue sky” but no sky is really all blue. It is much better to start on the top of the canvas, with the zenith; painting in with a blue-green with white depending on the depth of colour, gradually adding white as you come down to the horizon, if the sun is in the opposite horizon. If you are painting a sunrise or sunset, the horizon will be warmer, and if the sun is high in the heavens, say at noon, the zenith would be warm and the horizon cold.

The sky should be broken up with its component colours; for example, in the morning in the zenith, cobalt blue should be worked in after the blue-green has been painted and decrease the amount of blue as you come down to the horizon. If there are clouds they should be painted in with white and the shadows blue-violet, as explained later under the chapter on clouds.

Do not add any warm colours to the sky until the rest of the picture is painted in with the cold colours.

The next thing to do is to paint the distance in cold colours. This you will find has a lot of blue-violet, blue and blue-green and, of course, in the autumn a lot of crimson and purple. Do not add any

warm colours, such as red, orange, yellow or yellow-green until the picture is all laid in in cold colours.

You paint next the middle distance with the same cold colours. A little less white is used and more of the so-called local colours. Still no warm colours should be used.

The foreground is painted next. This should be painted with stronger colours, such as purple, crimson, blue-violet, blue and blue-green. In the foreground, these colours can be neutralized with their own complementary. The nearer the foreground the more the colour is neutralized. Again do not use any straight warm colours; that is, if you wish to get clear tones and brilliant colours, especially if you are painting a picture to portray sunlight. Refer to the illustration of "Autumn Landscape," which will show how to lay in colours at the start of painting pictures with cold colours first.

We come to the detail of the trees and shrubbery, rocks, earth, etc., all with cold colours but keeping the picture simple. By using this method you can paint through any one of these cold colours without making a muddy, dull or uninteresting colour.

Then start with the warm colours in the sky. You can use a little yellow, orange or yellow-green on the horizon which should be broken in to the cold colours already there; lightening the tone, gradually decreasing the warm colours as you go up to the zenith. You can leave the colours broken as much as you like, depending on the type of picture, whether you wish it heavily painted or lightly handled. The next thing is to put the warm colours in to the lighted side of the clouds which could be yellow, orange, yellow-orange, red or crimson, depending on the time of day. The next thing to paint is the distant warm colours. Do not get it too warm immediately or your colour will come forward too much. You can add these warm colours, such as yellow-green, yellow, red, orange, scarlet and purple with more or less white to keep the value and perspective of colour. Remember that the atmosphere is a blue- or blue-violet and influences all colours.

Do not put in too much detail but rather suggest it in a vague way. Next put in your warm colours in the middle distance, adding more detail but not too much; simplicity is artistic. At the same time the warm light on the trunk and branches of trees can be put in and the light side of the foliage should follow. If you do not wish the picture to be very brilliant, as in "Autumn Landscape," you can add

a little of the complementary colours to each of the warm colours. If you wish a mural effect add a great deal of white either with the brilliant or the neutralized tones.

Now the foreground should be painted with full colour more or less neutralized and more detail should be shown.

Remember that the light side of the green foliage of trees in the far distance may look only blue-green with white and the shadows blue-violet or blue.

In the autumn the foliage of a red maple of the lighted side may be purple, crimson, scarlet or orange, with white and the shadows may be a blue-violet or violet. In this way you get the effect of light on colour in the distance. In the middle distance you put more warmth of colour in the lights and slightly neutralized cold colours on top in the foreground. Your warm colours can be in full brilliancy. If you wish sunlight use yellow, yellow-green, orange, red, scarlet or crimson.

The detailed information on painting trees, rocks, fences, houses, water and clouds will each be treated in a separate chapter.

In the winter the snow reflects the sunlight, depending on the time of day, with yellow, orange, or red. The shadows always reflect the sky and this is reflected by the colour of the light in simultaneous contrast. I will treat this subject of winter in more detail in the chapter on winter.

I have not included in this work colour spectrum, mixing charts, or the colour chart showing perspectives of colour, as they can be studied in *The Art of Colour*.

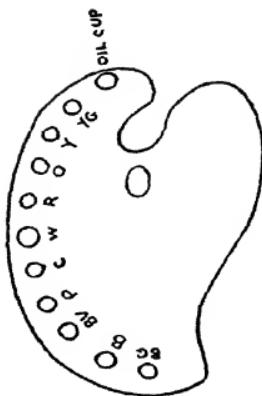
It is very important, of course, to make sure that your paints are permanent alone and in mixtures. I reiterate that paints are not colour, they are simply chemicals ground in oil, water colours, tempera or pastel, to reflect the rays of light of different colours. The law of pigments is not the law to follow in getting brilliancy in your picture but the law of light is: using pigments to portray this light. In some of the books on painting the use of prussian blue is suggested. Also emerald green and lead white and many other colours which are not permanent. The colours to use for permanency and which will mix together without altering their permanency are as follows:

Red	Cadmium Red
Orange	Cadmium Orange, deep

Yellow	Cadmium Yellow, pale
Yellow-green .. .	Permanent Light Green, Oxide of Chromium
Green	Do not use Emerald Green, which is the spectrum colour but not permanent. You can approximate this colour with a Yellow-green and Blue-Green which would be permanent.
Blue-green .. .	Oxide of Chromium, dark. Sometimes known as Emeraude Green or Veridian.
Blue	Cobalt Blue
Blue-violet .. .	Ultramarine Blue
Violet	Do not use Mauve unless marked permanent. You can make this colour with Ultramarine Blue and Cobalt Violet and it will be permanent.
Purple	Cobalt Violet, which is really a Purple.
Crimson	Alizarin Crimson
Scarlet	This is made with Harrison Red or Alizarin Crimson mixed with Cadmium Red.

It is not necessary to use all these colours on your palette as you can get along very well with a palette shown in figure 1, namely, Cadmium Red, Cadmium Orange, Cadmium Yellow, Permanent Light Green, Emeraude, Cobalt Blue, Ultramarine Blue, Cobalt Violet, Alizarin Crimson and Zinc White or Titanium White, but do not use Lead White as it turns gray in a few years. These nine colours can be used to reproduce the spectrum colours as in the chart, and by adding their complementary you can have all the grays, neutralized tones or tints as shown in the colour mixing charts. Do not use black.

Under no circumstances use the colours which I call "mud" or black; while they are permanent they have no vibration or scintillation, as I have explained before. They are all right to paint the side



PERMANENT PALETTE

BG—Blue-Green—Emeraude or Veridian

B—Blue—Cobalt Blue

BV—Blue-violet—Ultramarine Blue

P—Purple—Cobalt Violet

C—Crimson—Alizarin Crimson

W—White—Zinc White

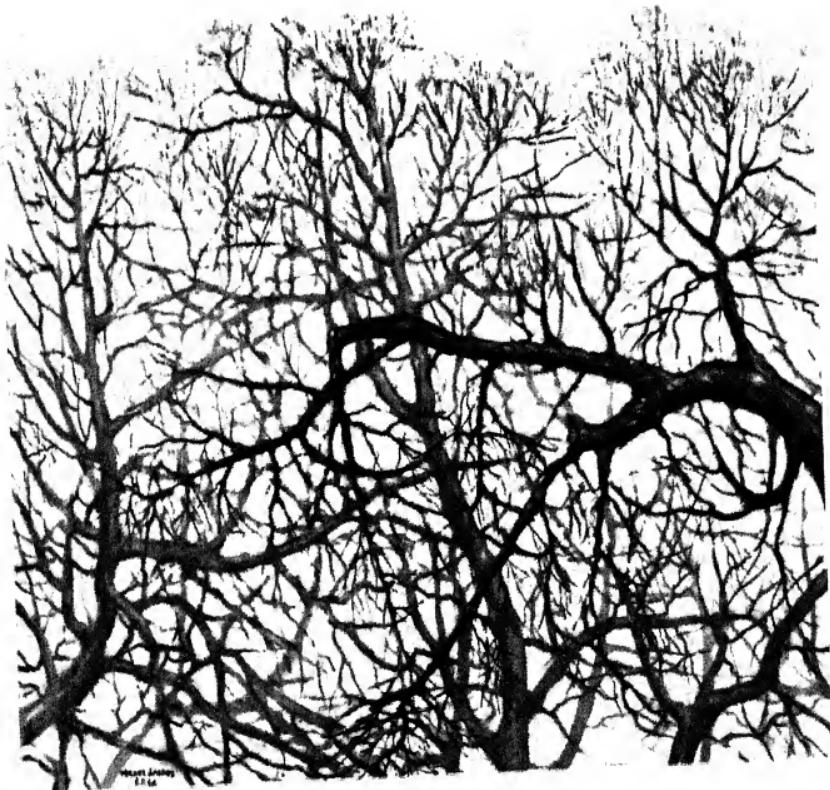
R—Red—Cadmium Red

O—Orange—Cadmium Orange

Y—Yellow—Cadmium Yellow Pale

YG—Yellow-green—Permanent Light Green

FIGURE I



THE LACE OF SPRING

Showing tops of trees and how the branches leave the parent trunk.

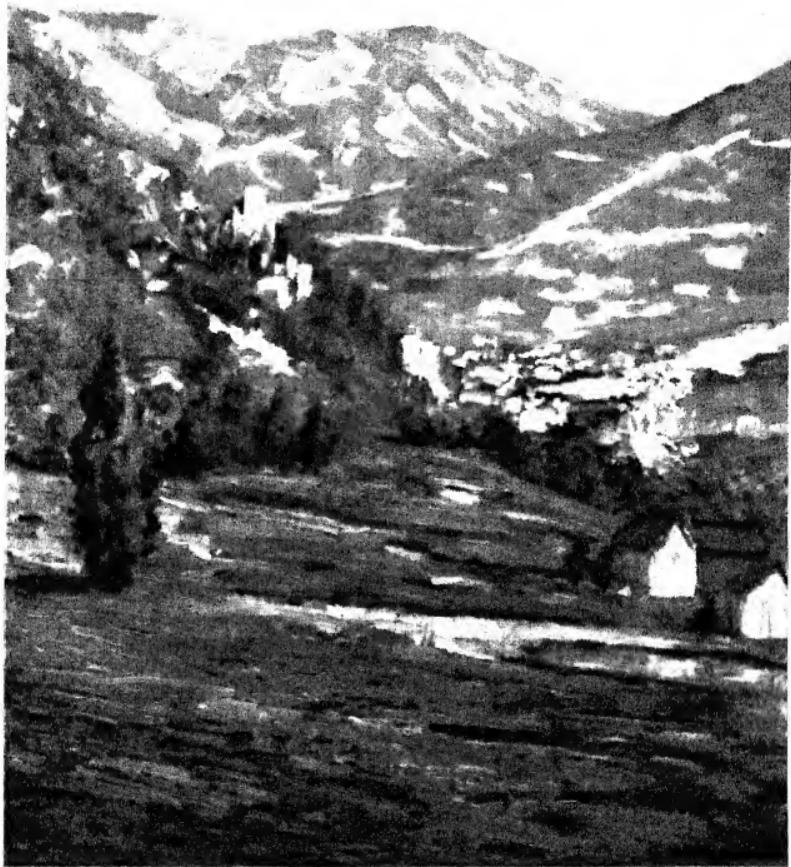
by MICHEL JACOBS, F.R.S.A.



PETER PAN

by MICHEL JACOBS, F.R.S.A.

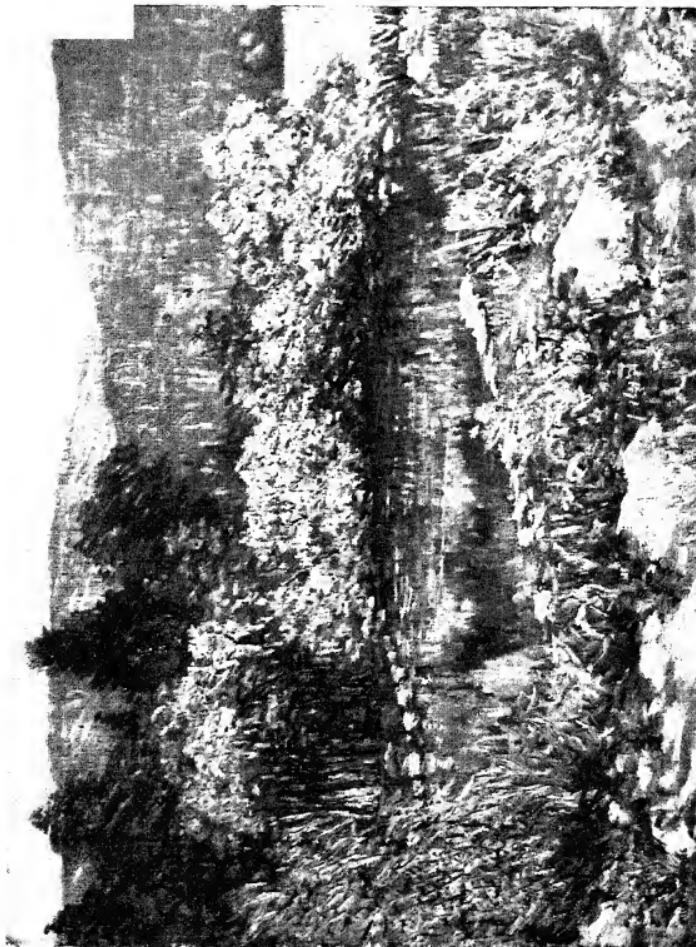
Showing the top of trees as a decoration.



BELLEVILLE, CALIFORNIA

by MICHEL JACOBS, F.R.S.A.

Showing broad brush handling with the shadows going toward the complementary.



by MICHEL JACOBS, F.R.S.A.

A tonality of yellow, yellow green, and blue green.

A TRANQUIL POOL.

of a wall or floor but should not be used in painting a picture as they take all the vitality out of the colour.

Again I strongly advise the artist and student to refer to the appendix in *The Art of Colour* where all the chemical properties of each paint are described with their complementaries.

The handling of paint or the way the paint is applied to the canvas is important. If you use a brush there are many ways of handling the brush whether you use a large one and put the paint on in large bold strokes as in the illustration "A Rock Quarry," or use a small one and apply the paint in small strokes as in the illustrations "Summer" and also "Delaware Water Gap." You should put the cold colours in first and I would suggest this under-painting be put on in broad brush strokes in either method. Remember, your brush work should be as individual as your signature and until you can paint without thought of your handling, your pictures will be of little interest artistically. You do not think how to form letters in your signature after you have passed your adolescence. The Japanese value a picture more on account of the freedom with which the picture is painted than any other reason.

There is another method in applying the paint called "palette knife" painting (see frontispiece) using different types of knives known as painting knives; they come in many shapes, sizes, and have the thinness of steel.

In painting this type of picture it is sometimes easier to lay in the under, cold colours with a brush, using very thin paint mixed with a little varnish and turpentine. This makes the paint stick better. But if you are very skillful you can paint the picture from beginning to the end with the knife.

This palette knife method is excellent for painting in clouds, dragging the paint on the canvas with the knife to form the clouds when they are windblown. The paint should be put on quite thick in places.

CHAPTER III: COLOUR IN SPRING



N THE spring a young man's fancy lightly turns to thoughts of love." I presume the young ladies have the same thoughts (although I have heard the young ladies have the same thoughts during the whole year) and the reason for this is because nature is starting to bring forth things of beauty and delicacy. The budding season would naturally make the human being also think of reproduction, which is the same as all nature does with all things.

Spring should be treated not brutally but with delicacy. Study a tree with its small buds as shown in the illustration called "Dentelle Printanière," "Lace of Spring."

In this season of the year one must be very careful to study the formations of the branches before the leaves have hidden their beauty. The bark of the tree in spring is intensely interesting. Observe that every tree has a different bark. In plate 2 is given a few illustrations of the way a tree grows. It is not just a matter of a lot of sticks stuck together as I have seen some painters portray a tree. I would have the artists remember that the tree expects to grow and the sap must be able to rise through the main trunk to the smaller branches so that the buds can burst forth. It is advisable to study all the different forms which are illustrated and if you "moderns" want to originate another form, bear in mind you must do something better and more interesting than the Creator has done, if possible, which I doubt. By using nature's design you can make many interesting forms and decorations. The trunk or the roots of a tree make marvelous designs and it is surprising that the modern painters have not made use of the top branches of the trees as is done in the illustration "Lace of Spring."

The colour of the trunk of a tree, of course, depends on the kind of tree but it also depends on its surroundings and the time and the kind of day. For example, in the early morning on a bright sunlit day the light side of a trunk of a maple may be light neutralized green or yellow-green and the shadows toward the complementary may be a purple, violet, or blue-violet. It is not just gray. The colour isn't brilliant colour except on the light side but as I have explained in *The Art of Colour* the shadows would be neutralized by mixing its complementary colours; for example, violet would be mixed with a

yellow to make a neutral violet or a purple would be mixed with a yellow-green to make a neutral purple or a blue would be mixed with a red to make a neutralized blue.

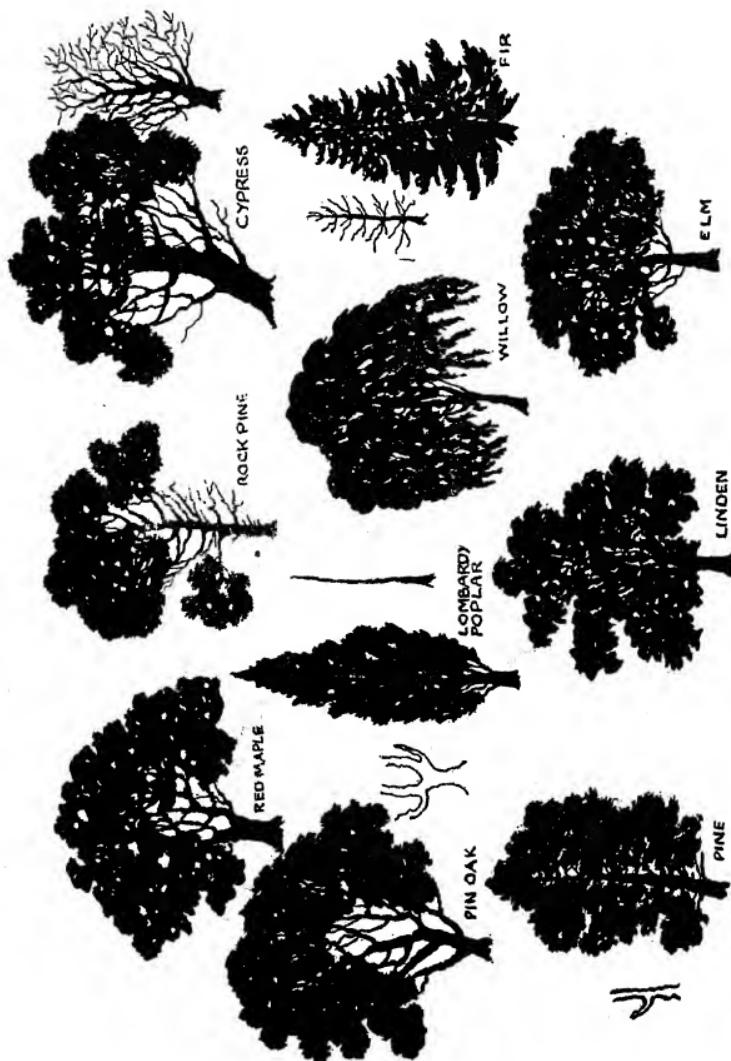
In the early spring the branches of a tree show distinctly. You will notice the way a branch comes out from the parent trunk and the small branches come out from the larger branches and the still smaller branches grow from the small branches that diminish in size to the small stem on which the buds form and the leaves eventually spring forth. You will notice that on a maple, oak, linden, elm, sycamore the branches have a bracket below and a U shape space on top; they do not just stick out as if you were sticking a dowel stick into a piece of lumber. Also you will notice that these branches come out from a "bump" on a tree and not from a hollow as shown in "Peter Pan" and "Lace of Spring."

In the pine family the branches come out straighter and more at right angles than on the other trees but still the bracket on the bottom and the U on the top are the same in a modified way. The branches of the pine family are straighter and, of course, in the spring the foliage covers the pine and the new growth comes out at the ends of the branches in lighter green. The colour of the pine will be quite dark in the early spring as it has weathered the winter. The shadows will be blue or blue-violet and the lighted side a blue-green; if the sun is shining on them, perhaps a green, all neutralized.

Remember that the branches of all trees which show so distinctly in the spring must taper as they go out from the parent branch or trunk, and the branches must taper as they leave the branch and so on ad infinitum. You will notice that the branches grow out from the trunk from different sides, never from the same circle. They will come out alternately in steps from the parent stem or branches, except in most of the pine family where they come out from the same circle, as you will see from figure 2.

In the light that comes through the branches of all the trees you will find the brighter light in the large masses, getting a little darker as the holes in the tree get smaller. But remember light comes through any aperture in round holes, never in square or triangular forms; the corners are always rounded and sometimes the hole is simply a round dot. This is especially noticeable when the trees are silhouetted against the sky.

The cast shadows from all trees will be either long or short depend-



SILHOUETTES OF DIFFERENT TREES FIGURE 2

ing on the time of day. Again observe that the light between the branch in the cast shadows are a series of round holes.

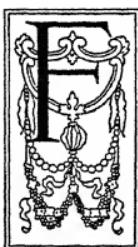
The grass in early spring will be more or less yellow or orange with just a faint effect of yellow-green broken through.

The best way to lay in the grass in the foreground is first to lay in the cold colours horizontally, which will act as the shadow of the uneven earth, depressions and mounds. The side of the depression furthest from you will have a dark shadow, which with the cold colours can be laid in with a neutralized-purple, red or blue-violet. Sometimes a little of the light earth shows on the near side. When the grass is put in, it should first be put in with the cold colours in a more or less upright position, trying to remember that the grass grows in clumps and groups. It is a good idea to try to make a design of these clumps. Later on the stroke of the grass can be suggested very lightly if you wish more detail than the broad way of painting. The colour of the grass in the spring will be blue-violet, blue, green, yellow-green and yellow and perhaps orange, and the underneath earth showing through in the opposite direction purple, crimson or red, neutralized, as you will notice in the illustration "Tranquil Pool."

In the middle distance the hue of the atmosphere changes the colour. You will therefore put in more blue-violet, which is the colour of the atmosphere. The further you go in the distance you will add more blue-violet and white in the grass with much less detail.

In the late spring when the buds start to burst forth in all the trees except the pine you will notice they have a crimson or violet or purple hue with white. This should be put on after the branches have been drawn and painted in in the cold and warm colours. You will observe these buds will be on the ends of the small branches and remember that the light comes through these groups of small buds in round holes also and that the large holes have more light than the smaller ones, as you will see in the illustration called the "Lace of Spring."

CHAPTER IV: COLOUR IN SUMMER



FOR many years so-called "green" pictures have not impressed the dealers although people love the summertime, with the foliage, the green pastures, the green trees and mountains. The reason for this is that the "Brown's Sauce" painters have painted this season without any idea of the effect of light on colour.

It is possible to paint a summer landscape with a great deal of charming shades and tones and the distant hills changing to a blue and blue-violet, as you will see by the illustration of "Summer" or "Belleville, California."

Especially notice the pattern of the dark masses in the foliage of the trees and the light masses making an interesting pattern.

Again I would repeat that starting with the sky, if the sun is shining and the sky is clear, begin in the same way as in the springtime in the preceding chapter with blue-green and blue and white.

The distant hills and distant fields may have a great deal of blue-violet, the colour of the atmosphere, and, of course, this should be laid in first with the cold colours, perhaps purple or crimson broken in irregularly to get a scintillation by using their components. Keep the hills in the distance flat in more or less as a poster. When you paint into this cold colour, suggest trees and perhaps rocks and especially trunks of trees. Keep all in the atmosphere and simple.

For the middle distance you again should lay in the blue-violet for the shadow of trees, rocks and buildings, adding the cold colours; namely, blue-green, blue, blue-violet, violet, purple and crimson, leaving the places where the sun strikes, painting very thin in these cold colours. It is a good idea to use a medium to thin the paint when using cold colours: a mixture of turpentine and mastic varnish about half and half. This will tend to dry quickly so when you add the warm colours they will stay where you paint and not mix with the underpainting.

As you come forward you again paint in the cold colours first. They should be neutralized more or less; in the foreground you can neutralize much more.

Water, rocks and clouds will be taken up in a separate chapter. These interesting details give many changes of colour and relieve the monotony of the greens.

If it is a gray day in the summertime you should paint in the sky

in the same way with the cold colours first, but they should be neutralized a little with a great deal of white, making an interesting pattern of the clouds as explained later.

Painting the distance should also have a great deal of white and slightly neutralized with all the cold colours first. In the foreground, the colours should be very much neutralized, while keeping to the cold side.

Now referring back to the sunlit day. If you wish to get a brilliant sunlight, add your warm colours, such as red, orange, yellow, yellow-green and green with a great deal of white in the distance, breaking these warm colours into the cold colours which you have already painted with the paint mixed with the medium, but keep the forms simple with one mass against the other. As you come forward increase the warm colours and especially note the light falling on the sunlit parts of the trees and grass; strange as it may seem many green leaves will show crimson with white highlights. Again I call your attention to the spots of the light coming through the trees in round holes, also in the cast shadows; they are always a series of rounds and never square or angular.

The sunlight on the earth will most likely be an orange with white, red with white, or perhaps a yellow with white, especially if the ground is sandy. The cast shadows will, of course, be cold. On the earth they may be purple, on the grass in the foreground they may be blue-green broken into with blue and neutralized yellow-green or green. In the distance they may be blue or blue-violet. Of course, some white is added to get the correct value.

So you see that a green landscape will have a lot of colour in it. Sometimes a river or lake makes an interesting note. I will treat this in a separate chapter. I am sure that a summer landscape need not look like a bunch of spinach.

The diversified colours of the trunks of the trees, logs, rocks and the earth, and the dark cold colours in the contour of the ground, are explained in the previous chapter.

CHAPTER V: COLOUR IN AUTUMN



THE colours nature uses in autumn are very bountiful and diversified. Nature seems to burst forth in gorgeous tones before she goes to sleep for the winter.

In starting an autumn landscape, of course, the first thing to do is to make your drawing in the same way as described in spring and summer. But it is a good idea in this season of the year to use blue-violet with a lot of turpentine and mastic varnish, instead of blue-green, as the blue-violet will give more brilliancy because it will not tend to neutralize the warm colours. Draw in the hills, the middle distance and the foreground in large masses. The first thing to do to get sunlight into the sky is to paint the blue-green and the blue with white and, as explained in the previous chapter, if the sun is in the horizon paint more white below and if in the zenith more white in that part of the sky.

I am going to describe first autumn in sunlight, because in that period the colours are much more brilliant and the colours go toward their complementary much more violently than they will on a gray day.

So let us start, after the sky is painted, to paint the hill or the distant trees or fields, painting in the cold colours, starting with blue-violet and white, using crimson and purple with white, suggesting more or less the autumn trees in the distance, but remember, only cold colours first.

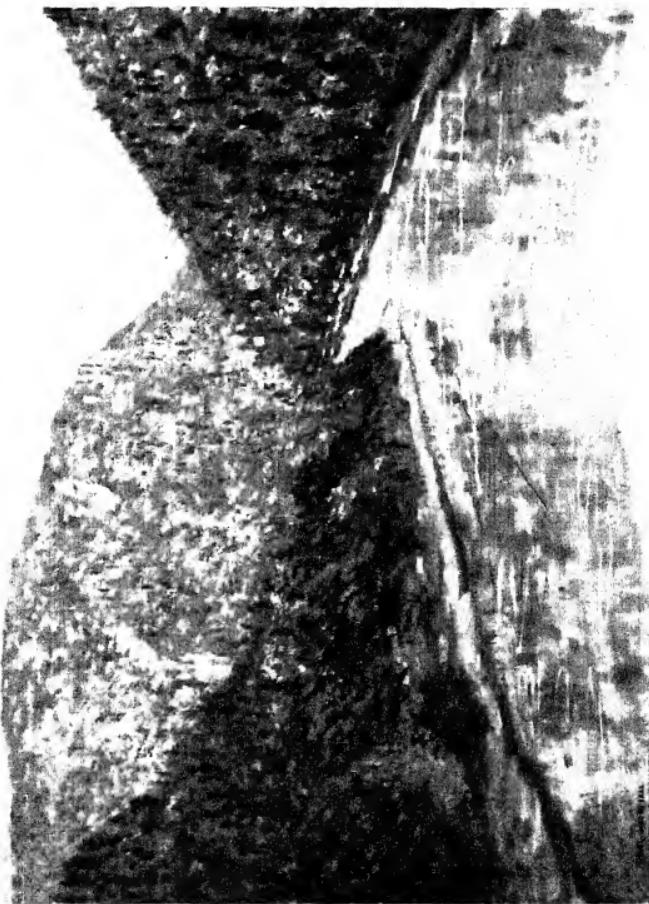
The next is the middle distance. Make your colours a little stronger and less white, but still the cold colours, keeping the masses in more or less posteresque form, one mass against the other. You will have to decide what the dominant colour note in the picture is to be; put this in with stronger shadows. The lighted side in the middle distance of the trees should be painted in very thinly with the cold colours, but as I have said above it is good to put on the paint with turpentine and mastic varnish, as it will dry more or less and become "tacky" by the time you put in the warm colours.

The foreground should be painted with the shadows a little richer in the cold colours and slightly neutralized. Remember that the more light that is on the object the further toward the complementary the shadow will go. This does not mean that you go directly to the complementary, but *toward* it. For example, orange, yellow, yellow-



SUMMER, THE AFTER GLOW
Showing the haze on the hillside and the green of summer can be made interesting.

by MICHEL JACOBS, F.R.S.A.



DELAWARE WATER GAP

In early Autumn, showing the reflections of water.

by MICHEL JACOBS, F.R.S.A.



BRITTANY, FRANCE

by MICHEL JACOBS, F.R.S.A.

Showing a gray day, no cast shadows.



SAINT AUGUSTINE, FLORIDA

by MICHEL JACOBS, F.R.S.A.

Showing the handling of brick and buildings in brilliant sunlight.

green, green and blue-green go toward the complementary to the right or clockwise and all colours that are red, scarlet, crimson, purple and violet go counterclockwise or to the left to their complementary. For example, a red tree (I love that red tree) will have a shadow in sunlight, violet and the half-tone purple with crimson. An orange tree, such as an oak, will have a shadow perhaps blue-green, blue, violet or purple and the half-tone may be a yellow-green with white neutralized. A yellow tree will go perhaps to blue-green, blue, or blue-violet in the shadow in the cold colours.

Now you put in the warm colours in the sky depending whether the zenith or horizon is lighted by the sun. In other words, early in the morning or late in the afternoon the horizon will be the warmest part but at high noon it will be the zenith. I am not attempting to give you a formula but only a guide for the things to look for.

After you have painted in all the cold colours including the sky you start to put in the warm colours in the distant hills. You will find that the red tree, orange tree and yellow tree are all much colder and they will partake of the atmosphere, which is a blue-violet. Do not overdo the warm colours in the distance. You will find the red tree (again) on the lighted side will only be crimson with white and the orange tree will also be more or less crimson, perhaps with a little blue-violet. The yellow tree will have more or less blue but very little on the lighted side. The idea is to keep the distance cold even on the lighted side. In the middle distance, the contrast is greater and more warm colours can be used with more or less white, except, of course, that you want to make an effect of a very warm middle distance to accentuate a special form. In that case you make the foreground much more neutralized to bring the foreground forward, thus accentuating the middle distance. Here again the individual taste comes in, otherwise, in the foreground the light should be quite strong in colour—sometimes using the colours directly from the tube to get the height of brilliancy.

Let us as an example again take the red maple tree. I use this because it has the most contrast. Let us say that the shadow that you have put in has been violet, purple and crimson with the turpentine and varnish. Paint in the half-tones first with scarlet or red and the highlight with orange as brilliant as possible. In that way you will have a maple tree that scintillates in the sunlight. See the illustration "Autumn Landscape."

The grass in the fall will have a certain yellow or orange tinge. Remember that you should put in the dark marks in the cold colours horizontally and perhaps a little of the light earth colour which shows through the long grass. Then put in the yellow-yellow-green and the yellow-orange to get the effect of the autumn grass.

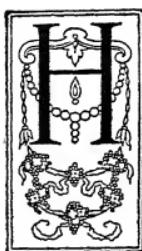
Before putting in these warm colours I hope you remembered to put the shadow of the trees on the grass in the cold colours, such as blue-violet, blue and blue-green and further away in the middle distance and distance paint the shadows with more white and more blue-violet. Remember the round holes on the ground in the cast shadows.

The trunks of trees in the foreground should be first painted in the cold colours to suggest the roughness of the bark and the warm colours "dragged" through to suggest the cracking of the bark; for example, oak, locust, or maple. See Plate 2. The birch tree will have a blue-violet or blue shadow with a half-tone blue-green and lots of white. The highlights may be yellow or orange with white. Keep the stroke of your brush horizontal on this type. Again I remind you these ideas only suggest, but you should never try to put your paint brush on in a stereotyped way. Your brush strokes are as individual as your signature and while you may not be a master in brush work immediately, such as Frans Hals, if you paint the way you feel with spirit and dash, knowledge and love you will eventually paint a masterpiece in technique and an artistic interpretation, whether you are an academic, modern or surrealist painter.

On gray days the colours will be more neutralized and the shadows will not go as far to the complementary as on a sunlit day. Remember you will have no cast shadows on a gray day but you will have shade where the sky does not reflect the light; you will have less orange, yellow and red with a great deal more white.

Paul Cornoyer, who was a very good friend of mine and whom I taught to paint sunlight, always painted gray days and sometimes with rain. In painting street scenes, of course, he was very much interested in the reflections on the wet pavements. He was delighted when I showed him how to get sunlight in his pictures. He wrote me a letter complimenting me; that he had at last "struck the real thing." Still his pictures are very interesting, if you like rainy days.

CHAPTER VI: COLOUR IN WINTER



AVE you ever noticed that people are more fond of winter scenes than all other landscapes? I was in Montreal one winter when the thermometer was down to 18 below zero. The Canadians liked to go out in their overshoes and go up to the mountain tobogganning, snowshoeing, and skiing. It is wonderful to be young. One of the art dealers in Montreal told me he sells more than a hundred winter scenes to one of autumn, summer or spring.

Remember what I said before, that snow is not just white, it reflects the sky in the shadows and it reflects the sun in the lights and, as white reflects all colours, you will find many colours in the white snow.

Again, the sky should be painted with a blue-green and white, perhaps a little richer in colour and less blue, as the sky is cold in winter. If there are clouds you will see how to paint them in the chapter on clouds.

The distance will have a lot of blue, blue-violet, violet and purple with white in the cold colours. They should be a little richer in the middle distance and also in the foreground, but much more neutralized.

After you have drawn your snow picture with drifts and hollows and the trees without the foliage, be very careful to get the branches and the trunks, following out the design of the individual tree and how they grow. When you have painted in the cold colours, start with the warm colours, using a great deal of white in the distance and, strange as it may seem, you will find a great deal of very light blue, blue-violet, purple and crimson in the bare tree in the distance, especially in the treetops, as sometimes the buds are on the treetops in winter.

As you come forward the tree trunks and branches in the winter partake of a yellow-green hue, especially in the foreground. This yellow-green is neutralized; where the sun strikes the light side of the tree trunks and branches there will be yellow or orange with white.

Painting the foreground to get high luminosity I find is a good idea. After I have painted in the cast shadows on a sunlit day I use

a great deal of varnish and turpentine, allowing it to dry so that the dark colours will not mix with the white snow. I paint the white snow with pure white without colour and after it has been laid in heavily I break into it where the sun shines with yellow, orange and crimson.

You will find on the edge where the shadow strikes the light the snow is slightly red or orange. The idea is to get the snow as white and as luminous as possible and if these warm colours are mixed on the canvas instead of the palette they will be much brighter. Remember that the cast shadows in the sunlight will reflect the sky. You will find that this shadow is mostly blue-violet with white. It does not need to be dark in value as you get the contrast of the cold colours against the warm.

You will find the depressions on the ground in shades of blue and blue-violet which should be painted in before you paint in the white and allowed to dry slightly. Stones and protrusions of all kinds will have the blue, blue-violet and violet shadows and all cast shadows will be surrounded, as I stated above, slightly with a tone of orange or red. If you are painting a snow scene in the late afternoon the snow on the light side will have more of crimson and orange. This applies, of course, to the day that has a brilliant sun.

On a gray day you will have no cast shadows and the snow itself will not be as brilliant or as warm as on the sunlit days. On these gray days the distance will be very hazy with a great deal of blue, blue-violet and violet. The cart tracks or footprints in the snow, whether animal or human, will have a blue or blue-violet shadow in each depression and a light side more on a bright day than on a gray day.

If you have ice on the ground this will act almost the same as water and will reflect the trees but not as brilliantly as if you had an open stream. This ice will reflect the blue of the sky slightly, but if you have an open pond or stream of water you will find that this will give a direct reflection of the sky. The things reflected into the water will be very sharp, especially if the water is still. See Chapter VII, "Reflections in Water."

The trunks of most trees will be a neutralized yellow-green as I have stated above and the shadows on the shady side of the trees will be a neutralized blue. The sunlight will be reflected with yellow and white and orange and white.

If the snow sticks to the branches, you will find the side facing the light very light but each branch will have the shadow of the snow, which will be a blue-violet or blue. See "A White Christmas."

CHAPTER VII: REFLECTIONS IN WATER



THE old saying "to hold a mirror up to nature" is exactly what you do when you paint water in a landscape.

If the water is tranquil without ripples you will get almost a perfect mirror of what is reflected into your eye. The scientific term that "the angle of incident is the angle of reflections" means in simple language that anything you look at at a certain angle will reflect an object in the same angle. If a tree grows more or less straight the reflections will be straight down and all objects that are perpendicular will be reflected in your eye. This is just the reverse of perspective, for remember that a reflection is not a tangible thing as is a shadow. It is simply a reflection in your eye but does not exist in the water itself. You can prove this by looking at a tree from the right-hand side. The tree will come down to you to the right. If you go to the left the tree will appear to come down to you on the left and if you stand straight in front it will appear to come down straight to your eye. On the other hand, if a tree is bent to the right the reflection will go down toward the right or to the left if it leans to the left.

I found a good way of painting reflections in water. First I paint the colour of the water which is, of course, a reflection of the sky. Let us say it is a blue-green with white, and if there are clouds also you paint them in the water as they look in the sky, only reversed. Next you paint the trees and foliage, rocks and whatever is reflected in a straight way, as if you were painting the landscape in reverse, and while still wet take a dry brush fairly wide and make your strokes horizontally right and left; in other words, "dragging" the paint, which will make the small ripples. See "Tranquil Pool" and "A Rock Quarry." This is a little trick which I have discovered and which I pass on to you. After you have succeeded in getting the water to look like the reflections with the dragging of paint, next with a very small brush with white put in a few lines horizontally, which will add to the depth of the reflection.

On the far distant shore of the water where the shore and water meet you will find a dark edge which is really the wet earth. This will most likely be a neutralized purple or crimson.

You can paint the water in a more posteresque or direct way,

with direct strokes. But this method will not be as natural looking as the "dragged" paint method.

Don't forget in painting the water to put in the cold colours first, as you did on the original landscapes, but instead of using mastic and turpentine as a medium I find it better to use poppy oil, because you want to keep these colours moist so that when you "drag" the dry colours with the brush it will be more easily moved.

If the water is very rough the reflections, of course, will not be as perfect as in the "Tranquil Pool" and perhaps you will have to use a method half-way between "dragging" and a direct way in the reflections. Be careful when you see the reflections that you get in really what is in the distance first, which will be on the far side of the water. For example, the hills in the distance will be the first thing reflected if you are high enough to see them reflected.

In painting running streams the only place where the reflections are shown is in the still part or pools. When the water is rushing over rocks there is hardly any reflection, and you will have to paint this more or less from memory because moving water will not hold still long enough for you to paint it.

You may ask, "Why is it that a camera can photograph these reflections?" I would ask you to remember that the lens of the camera is similar to the human eye and the reflections are brought to a focus in the lens of the eye, but it also holds good that if you take your camera to the right and photograph the reflections from there and then take it to the left you will get two entirely different angles of reflections.

Reflections in large pools are easy to see but there are small puddles that also reflect; even small patches of wet earth. If you refer to one of Cornoyer's pictures you will see that he made a lot of use of the reflections on wet pavements. This makes his pictures so interesting.

Reflections to me are one of the most interesting things to paint into a picture.

CHAPTER VIII: CLOUDS

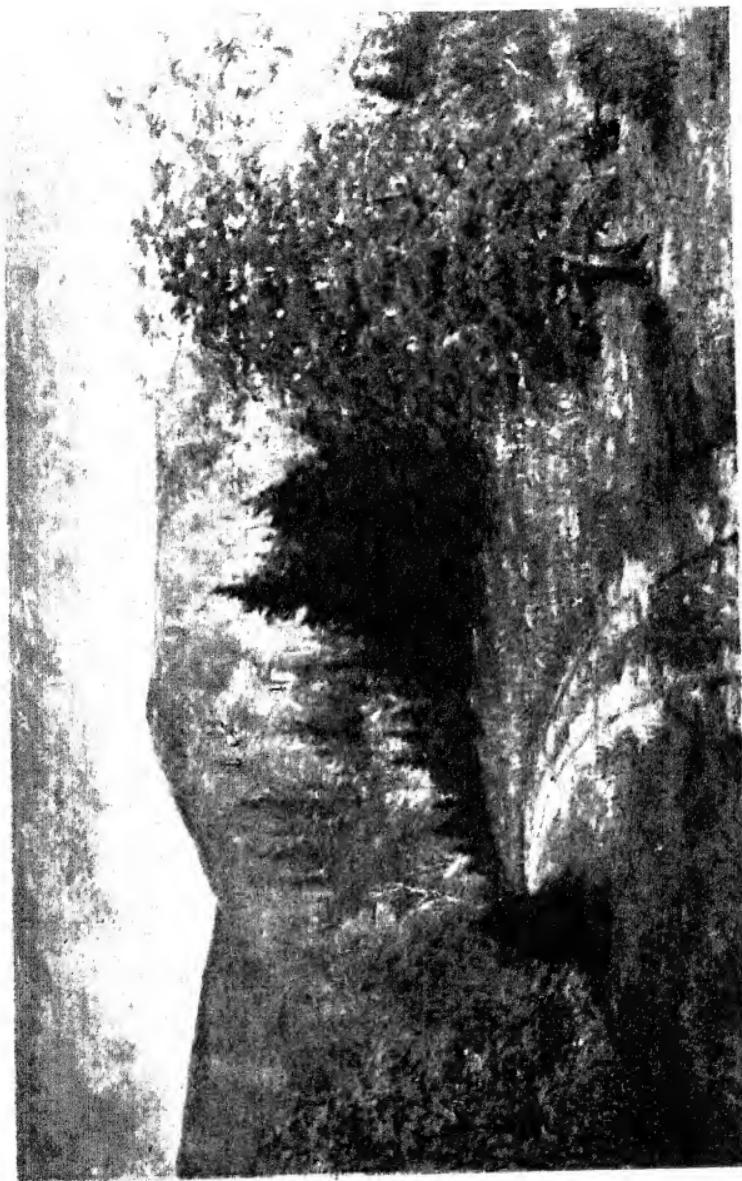


THE painting of clouds on a sunny day, after the sky has been painted with the cold colours, as explained in previous chapters, requires the painting of the shadow of clouds in cold colours, which you will find to be mostly blue-violet with white. This blue-violet, because blue-violet paint is not very brilliant in itself, does not need to be neutralized except on a very dark cloud, but as long as the sun is shining and the clouds roving cumulus, in a somewhat clear sky it is enough to paint the shadows with blue-violet and white only. The light side of the clouds on a sunlit day will be yellow, orange, or red with a great deal of white, and this light side should be painted only after the sky is finished with its cold and warm colours.

If it is a gray day and no clear sky is shown, you will find that the stratus clouds will be slightly neutralized, the shadows being blue-violet neutralized with its complementary orange. It is good to break up the mass of gray clouds with a little neutralized blue-green and perhaps some neutralized orange and yellow as you will see in the picture called "Brittany."

Some of the different forms of clouds are: .

1. Cirrus—detached clouds of delicate appearance, fibrous (threadlike) structure and featherlike form, generally white in colour.
2. Cirro-stratus—a thin sheet of whitish cloud sometimes covering the sky completely and merely giving it a milky appearance; it is then called cirro-nebula or cirrus haze; at other times it presents more or less distinctly a fibrous structure like a tangled web. This sheet often produces haloes around the sun and moon.
3. Cirro-cumulus—a mackerel sky with small rounded masses or white flakes without shadow, or showing very slight shadow; arranged in groups and often in lines.
4. Alto-cumulus—larger rounded masses, white or grayish, partially shaded, arranged in groups or lines, and often so crowded together in the middle region that the cloudlets join.
5. Alto-stratus—a dense sheet of gray or blue-violet colour, sometimes forming a compact mass of dull-gray colour and fibrous structure; at other times thin like the denser forms of number 2.



AUTUMN

Showing shadows toward the complementary in the sunlight.

by MICHEL JACOBS, F.R.S.A.



The same picture on the preceding page in four steps of development to show the cold colours are applied first.



A ROCK QUARRY Showing the effect of morning sun on rocks and shadows and reflections.

By MICHAEL JACOBS, F.R.S.A.



WEST 57TH STREET, NEW YORK

by MICHEL JACOBS, F.R.S.A.

Showing old Baptist Church.

6. Strato-cumulus—large lumpy masses or rolls of dull gray cloud, frequently covering the whole sky, especially in winter. It may be distinguished from number 7 by its lumpy or rolling appearance, and by the fact that it does not tend to hold rain.

7. Nimbus (raincloud)—a dense layer of dark shapeless cloud, with ragged edges, from which steady rain or snow usually falls. If there are any openings in the cloud an upper layer of cirro-stratus or alto-stratus may almost invariably be seen through them. Nimbus breaking into ragged cloud or into detached fragments underneath a large numbus is termed Fracto-Nimbus.

8. Cumulus—thick cloud of which the upper surface is dome-shaped and exhibiting protuberances while the base is generally horizontal.

9. Cumulo-nimbus—thundercloud; great masses of cloud rising in the form of mountains or towers or anvils, generally having a veil or screen of fibrous texture at the top and at its base a cloud-mass similar to nimbus. From the base local showers of rain or of snow, occasionally of hail or soft hail usually fall. The front of a thunderstorm of wide extent is frequently in the form of a large arch above a region of uniformly lighter sky.

10. Stratus—a uniform layer of cloudlike fog, but not lying on the ground.

I have a very good method of painting the stratus clouds. Put the paint on very thick as mentioned above in the cold and warm colours and then use a thin flat spatula palette knife, known as a painting knife, and drag them together. This will give you accidental forms but you will get the general effect.

The cumulus clouds are painted more or less in the balloon or bulging forms sometimes known as the cauliflower clouds, thick clouds of which the upper surface is dome-shaped. This also can be brought together with the spatula painting knife if treated very lightly.

A mackerel sky is a cirro-cumulus with small rounded masses of white flakes with no shadows. I have given a number of different illustrations of clouds.

In spite of all the foregoing the main thing is for the artist to see the cloud formations and to remember them and I might say love them; they will be continually changing as all loves generally do.

CHAPTER IX: ROCKS



HERE are many kinds of stones and rocks in the fields and there are stone fences and quarries or big masses of igneous intrusions. Many of the rocks and stones in the fields have been brought down by glaciers and have been rounded by abrasion of the earth, somewhere ground by glaciers to a smoothness. I shall give you only a few of the most prominent ones and how to paint them.

In painting a quarry or a big mass of igneous intrusions that perhaps man has blasted or been upheaved give a rough and rugged form, as in "A Rock Quarry." There are many colours in a rock. This happens to be a marble quarry and the strata of rocks show distinctly the way they have been forced up in the formation of the world or by a volcano.

The first thing to do in this latter type of rock-painting is to paint in the cold colours, in the different forms, cracks and crevices, with blue-velvet, using the turpentine and varnish medium so that this drawing will dry quickly.

Next put in the cold colours, blue, blue-violet, violet, purple, crimson and scarlet with the right amount of white and neutralized as I have said before. If you get the cold colours under, the warm colours can be put on top as you will see by the picture of "Autumn." Although this plate is an autumn scene the colour handling applies in the same way.

Then put in the warm colours, starting with red and then orange, yellow and yellow-green and, of course, adding the right amount of white and neutralized depending on how much light is on the colour, and the colour reflected.

It is intensely interesting to get the different perspectives as they run away from you and appear smaller and to show the different strata of the rocks. This should be done in a very bold way.

The rocks and stones and boulders that have been run over by the glaciers in prehistoric times are more or less cold colours, keeping the shadows simple.

Paint in the half-tones with a flat brush, as broad as possible. These stones should all be treated in a more or less posteresque way.

The stones that have been used to make the fences, especially in New England, were most likely left by the glaciers and are really

large pebbles, so to speak. Of course, some of them may have been split, which gives them a rough edge. The first thing to do in painting these fences is to outline each stone in blue-violet with turpentine and varnish, painting thinly with a small brush.

Paint in the cold colours with white with a flat broad brush in between the markings of the individual stones. By following this method you will get the accidental rough edges which the stones have, whereas if you outline it after you have painted in the stones you would have it too regular with too much outline and definition. After you have painted in the cold colours, for example the shadowed side of the fence, and you wish to show the sunlight on the fence, use the warm colours with a great deal of white and do not mix too much on your palette. Rely on the mixture to form on the canvas.

The grass should be painted after these stones have been laid in, although you will have had the cold colours of the grass laid in with the rest of the cold colours; then as the stones are finished run the clumps or blades of grass up over the stones. See the illustration "A Tranquil Pool."

CHAPTER X: SUNLIGHT



S EVERYBODY knows colours are more brilliant in sunlight. In other words, when the sun is shining on an object, that particular object shows its greatest luminosity. This effect is only natural, because all pigments, dyes or other objects reflect the light, selecting the particular colour for which they were intended. A red object reflects the red rays of the sun, a green object reflects the green rays of the sun, a violet object reflects the violet rays of the sun, a yellow object reflects the red and green rays of the sun, a blue object reflects the green and the violet rays of the sun, and a crimson object reflects the violet and red rays of the sun simultaneously and you get the sensation of the red, blue and crimson. Likewise, the intermediate colours such as orange reflect more of the red rays and less of the green rays, and a yellow-green reflects more of the green rays and less of the red rays, etc.

As I have said before, in Chapter I, the colours of the spectrum are red, green and violet, which make the secondaries of the spectrum yellow, blue and crimson. Remember this is crimson, not just red, so that the pigmentary primaries are the secondaries of the spectrum. These pigmentary primaries can be mixed to make *nearly* all the other colours of the spectrum but not quite as brilliant as the pigment manufactured for that particular colour; for example, you cannot make a perfect green by the mixture of yellow and blue. This colour is a very impermanent colour called "Emerald Green" or "Paris Green" but it is not advisable to use it as it is not permanent. Likewise a red vermillion or red cadmium which is permanent cannot be made as brilliant by the mixture of the crimson and yellow, so we use the pigment that is manufactured purposely to reflect the red rays more or less perfectly. Likewise the violet in the spectrum cannot be mixed as brilliantly by the mixture of crimson and blue, as the chemist has not yet succeeded in giving us a good violet that is permanent. The nearest we can get to this violet is cobalt violet (which is permanent) and is more purple than violet, so we mix a little blue-violet to the cobalt violet to get a violet colour which is permanent.

Sunlight in itself has different colours depending on the time of day and the latitude or longitude: on the equator colours are much more brilliant than in the north temperate zone because the rays of

light from the sun are stronger. A north lighted window will give you a steady light throughout the day. That is why artists paint in a north light and all colour judging is done in this light.

On account of this light being stronger on the equator our eyes will see naturally in the shadows a colour which is more to the complementary. For example, in a red flannel shirt on the equator the shadows or shaded side of that shirt may be a blue-violet and the half-tone perhaps a crimson, whereas the same flannel shirt in the north temperate zone would perhaps only go as far as crimson or scarlet.

I will repeat again, even if I seem repetitious, the shadow of an object goes to its complementary clockwise or counterclockwise; starting with red of the spectrum, all colours such as red, scarlet, crimson, purple, violet go counterclockwise to their complementary and orange, yellow, yellow-green, green, blue-green, blue, blue-violet go clockwise to their complementary.

Now there may be a little doubt as to the way orange and blue-violet go to their complementary, for this would depend on the time of day and the latitude.

As I have explained before, if you put a brilliant object with a light shining directly on it and then quickly remove it, your eyes would seem to reproduce the complementary of the colour. This is called the after-image. This naturally makes the shadow of that brilliant object look like a colour *toward* the complementary and beside which to influence that colour; the shadow will reflect the sky. This is the reason why this colour system is truer to nature than in the old "Brown's Sauce School" which darkened the colour with black or some other "mud" colour. This always takes place whenever you see colour, for your eyes always work to see the after-image, so to speak, in the shadow.

I have coined a phrase and repeat again, "The colour of an object goes toward its complementary depending on how much light is on it or how brilliant the object is." This means that if a colour is shown on the equator and it is a brilliant object it will have a shadow further toward the complementary, but with a lesser light as in the north temperate zone, the shadow will not go so far toward the complementary, as I have explained before.

If an object is in itself a dull neutralized colour and also is shown on the equator the shadow also will not go so far toward the complementary. If that same object with the dull colour is shown in the north

temperate zone the shadow will not go even as far to the complementary as it would on the equator.

As the atmosphere in the north temperate zone is a blue-violet all colours in the distance, even in a bright sunlight, will be tinted with that colour.

To prove that colours only reflect the light that is thrown on them, take the red flannel shirt again and put a blue artificial light on it when no other light is visible; that red flannel shirt will look black because it has not the power to reflect the blue rays of light. The same would happen if it was a yellow object and you threw a violet light with no other light visible. That yellow object would also appear black. This applies to all the other colours and their complementsaries. Again I repeat, sunlight is composed only of the three spectrum primaries, red, green and violet and the combination of these three, separately or combined, makes you see all the colours that nature gives bountifully to us poor mortals to enjoy.

CHAPTER XI: GRAY DAYS



N a gray day when the sun is hidden by clouds it means that the rays of the sun cannot give forth the brilliancy that the particular pigment would show if it had the full light, so that all colours are neutralized with their own complementary and, of course, with white and the colour of the atmosphere, blue-violet in the distance.

And as I have said before on a gray day you will have no cast shadows but you will have the dark side of an object or shaded side, which does not reflect the light of the sky even if hidden by a cloud; whereas the lighted side will reflect the light of the cloud but the colour will not be as brilliant as if the sun shone on it. Naturally the colour of the shadow will not go as far toward the complementary because the nerves of the eye will not be excited to such a degree as they would be if the sun shone on the object and showed its full brilliancy; still the shaded side will go toward its complementary, but not as far. Just make the shadow darker and you will have the beautiful silvery tones of a gray day. See illustration "Brittany."

On many days that are partially clouded, the sun cases a very mild shadow. Of course, the shadow is not as brilliant or contrasting as the sunlit days but still they go to their complementaries, but not as far as in the full sun.

In painting a tonality it is much better to select a gray day as you will see in the illustration *Tranquil Pool "A"*, which is a tonality of yellows predominating, and in the illustration called "*Summer*," which is a tonality of greens and blues, the green predominating. One can make a tonality in oranges or reds or even crimsons. It is as if you were looking through a colored glass at the landscape. It is not a natural phenomena but an artistic interpretation of nature. In a sunset very often the landscape will take on a tonal effect, naturally of yellow-orange or orange in all seasons, spring, summer, autumn or winter.

Rainy days, of course, are gray days and you will often see beautiful effects, especially in cities where the sidewalks reflect the buildings and people. But even in these rainy days the shadow must always go toward the complementary if you would follow nature. The reflections on wet streets are most interesting, especially at night when all lights are reflected.

A very good example of a gray day is in Whistler's "Battersea Bridge" and most of Corot's landscapes are painted on gray days.

The clouds, if very heavy, have quite a lot of delicate tones that are not just gray. Very often a clouded sky has a very pale orange, yellow or yellow-green and sometimes a neutralized blue-violet with a great deal of white, as you will see in the illustrations, "Brittany," and in "Delaware Water Gap."

Many people prefer these gray days rather than brilliant sunlit pictures. They seem to be more poetic and have a mystery that is very pleasing.



THE RIVER OF DOUBT

A sunset showing the effect of a sunset sky on distant hills and reflection in water.

by MICHEL JACOBS, F.R.S.A.



REMBRANDT HOME, AMSTERDAM, HOLLAND

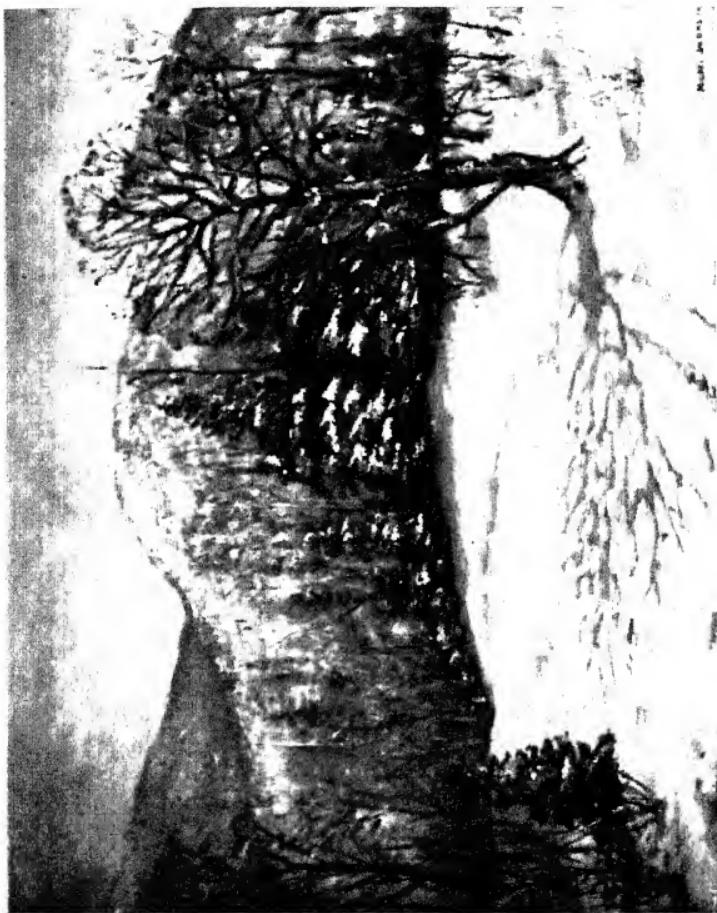
by MICHEL JACOBS, F.R.S.A.

Showing reflections of buildings in water and broad handling.



by MICHEL JACOBS, F.R.S.A.

A WHITE CHRISTMAS
Showing shadows cast on snow, a reflection of the sky opposite to the horizon.



by MICHAEL JACOBS, F.R.S.A.

SNOW IN VERY EARLY SPRING Showing the winter buds and purple hills.

CHAPTER XII: TONALITIES



HEN we paint a picture to which we wish to give a tonal effect, we are doing something which is really more or less artificial. Nature does give a tonal effect to all things when the sun is setting and the rays of the sun are longer and in themselves warmer. There are perhaps more of the red and green rays of light, which make you think that the sunset has an orange glow.

Manet, the great French artist, painted a haystack twelve times (the same haystack) during one day to show the changes of colour and light.

All these colours noticed in the sky in a sunset are one of the most glorious, stupendous, exhilarating, and exciting things that nature gives us. See "The River of Doubt." I am sorry to say pigments fall far short of the great luminosity of the heavens, except that now there is a luminous paint made for advertising which gives more nearly the colours of the spectrum. However, it has not yet been made for the artist in oil colours.

One cannot reproduce the brilliancy of the sunset, you can only approximate it. This is done by keeping other colours dark or neutralized so that the sky will show more brilliant by contrast. But besides what nature does to give a tonal effect over all things one can also give a tonal effect, as some of the greatest painters have done. I remember the pictures painted by Bruce Crane. He used to paint beautiful landscapes, always in a yellow-green tone, and likewise I have painted many pictures to get a certain tone, such as "A Tranquil Pool," which has a yellow tonal effect. One of the ways to do this is to leave out some of the cold colours, such as blue, blue-violet and violet and put in the colder shadows only by using a blue-green as the coldest with the light going as far as the crimson, keeping within the range of red, orange, yellow, yellow-green and blue-green.

Another way to do this would be to glaze the picture after it is painted with a so-called golden ochre paint. This will give a very rich golden tone to the whole picture or both methods can be used together.

A yellow-green tone can be arrived at by not using the blues or blue-violet or violet and mixing all colours with yellow-green.

Sometimes you want to get a tonality of, let us say, crimson. In

that case you do not use very much of the orange, yellow or yellow-green or green, using more crimson, red, scarlet, purple and violet.

If you wish to paint a picture for a mural decoration, for example, to go with a certain scheme of colours keep the picture in the tone of blue, blue-violet and violet and keep away from reds, oranges, and yellows. Use very little of the greens and crimsons, all of which should be mixed with blue to give it a general tone of blue. To get a flat finish you can use a little kerosene oil as a medium or after the picture is dry varnish it with a mat varnish.

This effect is very often used by interior decorators to bring a scheme of colours into a room so that the landscape can make a picture in a conventional individualistic idea not like nature perhaps, but to give the spirit which is the sign of a true artist, for painting nature exactly as it is is one thing and using your artistic interpretation is another, besides which it is lots of fun.

CHAPTER XIII: COLOUR OF BUILDINGS AND FENCES



PAINTING buildings is very much like still-life painting except it has perhaps more detail which you will have to simplify.

First you draw the silhouette against the sky that the buildings form, taking the entire mass of buildings, not just one individual building. If you get the design against the sky it will be very much like painting a jigsaw puzzle, for the rise and fall of the buildings will or should correspond to the places below, such as the windows and other details. If your silhouette is correctly drawn you will have no trouble with perspective. This subject will be taken up in the next chapter. The first thing to do is to draw your building in with blue-green, blue or blue-violet or if necessary pencil or charcoal. If you use the last two you will have to blow fixatif on the canvas so that the black does not show through. It is much better to draw in the painting in the simple lines with a small brush.

After you have painted the outline in details, you should keep the masses of colour of each building in a posteresque form in the cold colours.

Later on the warm colours broken into these cold colours will keep their luminosity. I would suggest in the first drawing that you use the medium of turpentine and varnish, which dries quickly.

If you have a brick building it is a good idea to paint the lines of the mortar; but not too many of them; just a few in the foreground to suggest the texture. These lines you paint in with the cold colours then when you put in the warm colours using a fairly small brush to paint in between the lines. Naturally, you will break into these lines, so that the bricks will not look like an architectural drawing and, of course, in the distant buildings the detail of the mortar will only be suggested by the texture. I find in painting brick that it is a good idea to use your brush vertically and horizontally rather than diagonally.

A concrete building can be painted with the strokes running every way. In a wooden building you will, of course, follow the lines of the clapboards and remember that perspective demands that your lines converge in the distance as they go away from your eye.

After you have painted in the cold masses in posteresque form you

have to paint the shadows of the windows and doors in cold colours. These lines must be drawn in the correct perspective (I hope you read the chapter on perspective).

Of course, if you have any sky you will paint that in the same way as instructed in previous chapters.

Fences should be drawn in the cold colours first in the division of the boards and cracks in the boards, if there are any, all in the cold colours with the medium so that when you paint in the warm colours the cracks and divisions disappear more or less as you work in the warm colours.

The ground or the street, if it is earth, should be treated with very thin cold colours painted first to suggest the lay of the ground. If it is cobble or gravel, outline these in the cold colours with the medium and in the warm colours more or less horizontally. The ground should lie flat and remember as it disappears in the distance it will have more white and more of the atmosphere colour, blue-violet, and as it comes forward the colours will be more neutralized and stronger.

If the buildings cast a shadow on the roadway or street you should paint that shadow in with the cold colours first or if it has reflection in the water as in the illustration of Rembrandt's birthplace in Amsterdam. The reflections of these buildings must be shown in the water, painting your lines down as is explained in the chapter on reflections. You will also notice this on the illustration of Venice.

Painting a barn in a landscape should be done very freely, and remember a red barn is purple in the shadows and neutralized red in the light in the north temperate zone.

A white building in the sunlight will have a blue or blue-violet shadow with lots of white and the light side in sunlight will be yellow with white, of course, scintillated with a little orange and yellow-green with a lot of white. The shadow of the eaves will be blue-violet most likely. See the illustration "Belleville, California."

On the other hand if you wish the barn to be the dominant note two things should be done: place it in the point of interest which will be explained in the chapter on composition by using dynamic symmetry and the colours should be more brilliant than the surrounding ground and foliage.

Remember the roof of any building always reflects the sky. A so-called gray slate roof may be blue, blue-green or blue-violet and

quite brilliant. The shadows of the different pieces of slate should be put in with the cold colours first and only suggested in places but not over the entire roof, as the eye cannot take in the full details of a very large building and only certain places will be prominent. One thing to remember above all is to paint your shadows with the cold colours first and add your warm colours into them while still wet or dry to get vibrating colours in the sun.

On a gray day you will have no cast shadows and your colours will all be neutralized in the silver tones as you will see by the picture "Brittany."

CHAPTER XIV: PERSPECTIVE OF COLOUR AND LINE



LOOKING at the illustrations "Summer," "A White Christmas," and "Autumn," you will see that the distant hills have a great deal of blue-violet mixed with each colour. As you come forward you will notice that the atmospheric colour, blue-violet, is not so evident. This shows distinctly in the "Autumn" landscape, in the "Summer," and the "Belleville, California," landscapes. You will also notice in the winter landscape the distant hills having a great deal of blue-violet.

Take, for instance, a red in the foreground with a purple shadow. As it goes into the middle distance the lighted side would be scarlet and violet with more white in the mixture. In the distance the lighted side becomes crimson instead of scarlet with more white added, and the shadow becomes blue-violet.

In the far distance the entire object becomes only a purple and blue-violet, the light colour even becoming purple and the shadows blue-violet, both mixed with white.

Take a crimson object in the foreground. The light side would be crimson, and, if the sun is shining, the shadow might be purple. In the middle distance the lighted side might be a mixture of crimson and purple and the shadow violet with white and in the distance the lighted side would become perhaps a violet and the shadows blue-violet mixed with a great deal of white. In the far distance it would almost be all blue-violet.

A purple object in the foreground would have purple on the lighted side and perhaps a blue-violet in the shadow. In the middle distance the lighted side would be a violet-purple and the shadow a blue-violet. In the distance the light would be a violet and the shadow a blue-violet. In the far distance the entire mass would look blue-violet.

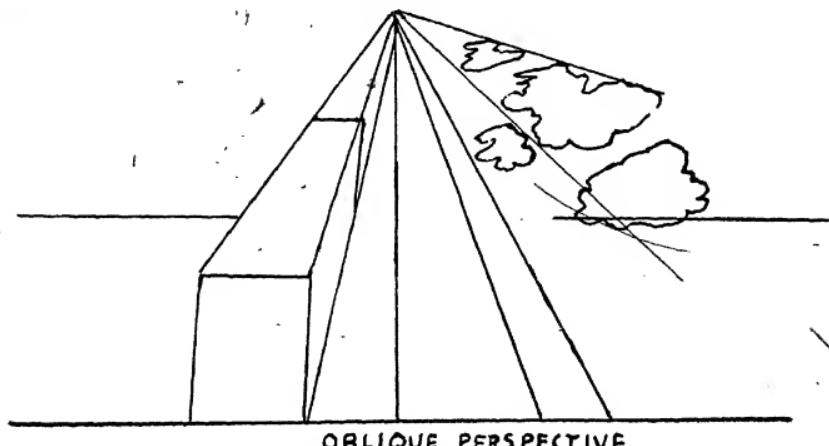
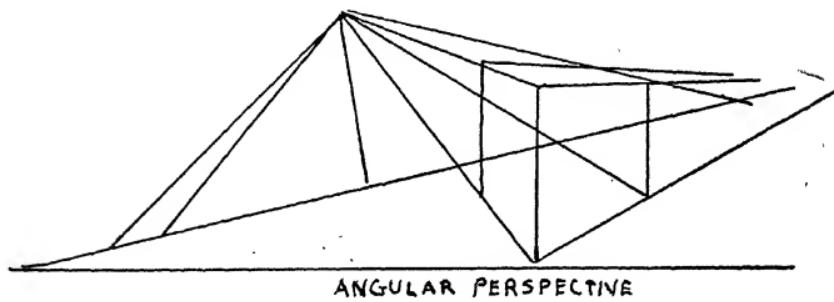
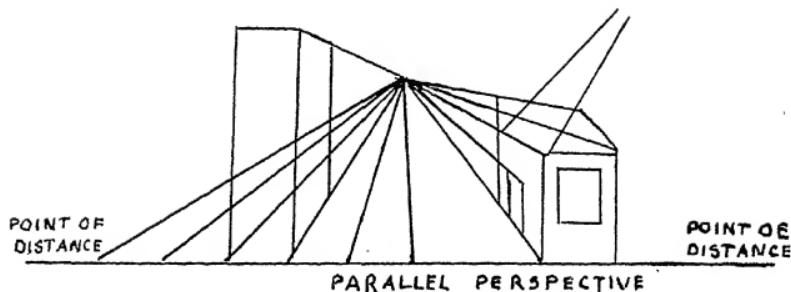
A violet object would have a light of violet with white and the shadow would look perhaps blue. In the middle distance the light would become a mixture of blue-violet and violet and the shadow would become more blue. In the middle distance the lighted side would be blue-violet with white and the shadow would have more blue. In the far distance it would all appear a blue or blue-violet with white.

A yellow-green object would have a lighted side of yellow-green and a shadow of blue-green. In the middle distance the yellow-green would become a green and the shadow more blue with white. In the distance the lighted side would become a blue-green and the shadow more blue-violet. In the far distance it would melt into blue-violet slightly tinted with blue-green.

So you see that all colours change as they disappear into the atmosphere. The colder the colour the more it will disappear into the atmosphere. Whereas, the warm colours such as red, orange and yellow will hold their brilliancy in the distance much longer.

I was asked by the Army during World War I my opinion as to what colour would show furthest with the trial balloons and, of course, I suggested vermillion or perhaps a red-orange and this was adopted.

Besides the perspective of colour you have also the perspective of line. This is not as difficult a subject as many students think. One of the things to remember is that all lines go to a point of sight and in parallel perspectives they will go toward the point which is directly in front of the eye. Now this does not mean that this point should be directly in the center of the picture. Sometimes it is at the side of the picture where you are looking but all lines will converge to the point of sight. Sometimes it is only five feet high (the average height of the eye from the ground) but sometimes the point of sight is way up in the air. This is called oblique perspective and sometimes you might have the two perspectives in the same picture, the parallel perspective and the oblique perspective. I have given a small drawing of parallel perspectives, angular perspectives, and oblique perspectives. An architect, of course, would want to measure the distances in perspectives in a very accurate way, so he uses the points of distance to make these measurements, but it is not necessary for the artist to do this.





FIR



MAPLE



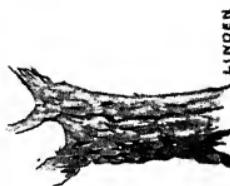
BUTTONWOOD



LINDEN



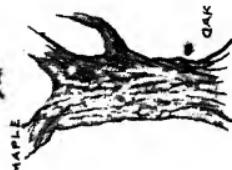
BIRCH



LINDEN

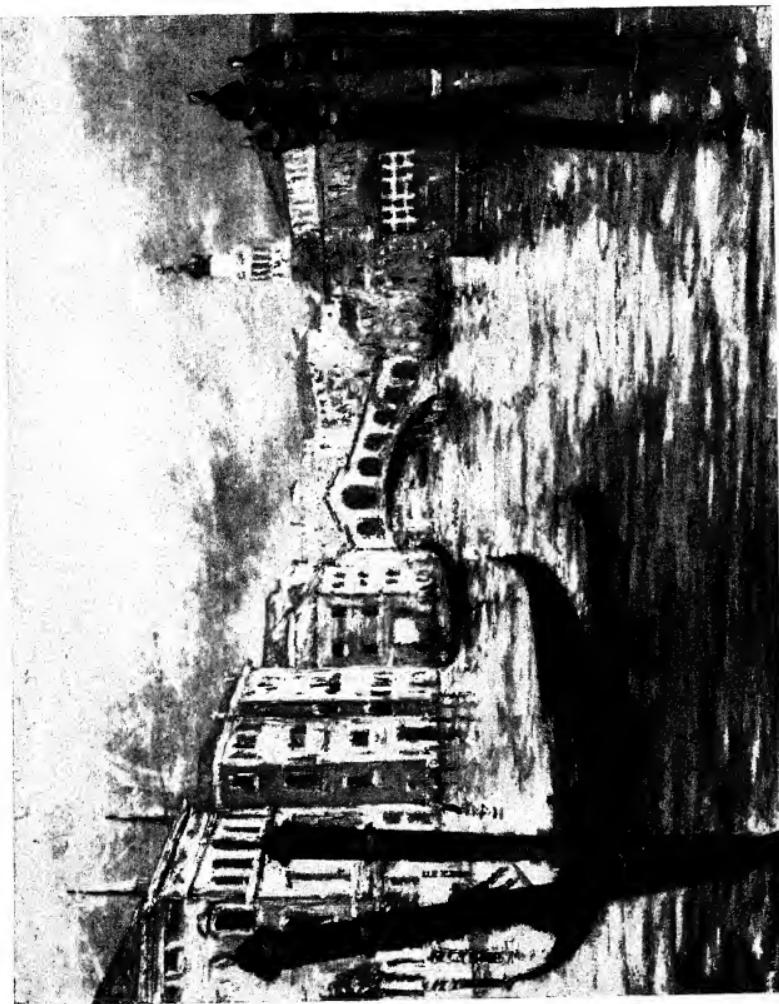


MAPLE



LOCUST





VENICE, ITALY PLATE 2



CASA DEL GARDE, SPAIN PLATE 3



CIRRUS CLOUDS PLATE 4



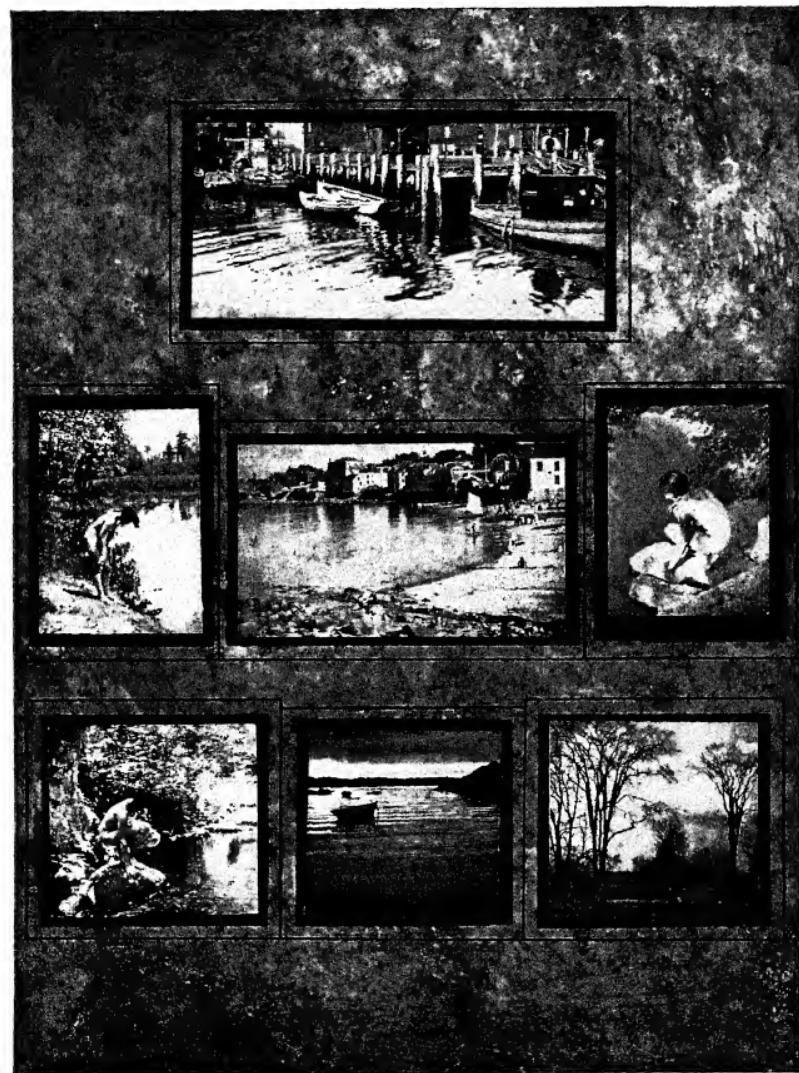
NIMBUS CLOUDS PLATE 5



CIRRO-CUMULUS CLOUDS PLATE 6



STRATO-CUMULUS CLOUDS PLATE 7

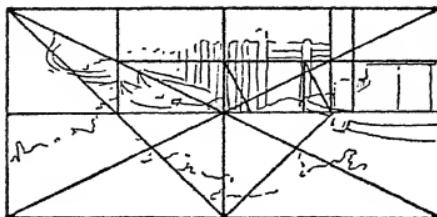


PHOTOGRAPHS FROM NATURE

By FRANK ROY FRAPKIE, S. M., F. R. P. S.

In Roots One, Two, Three, and Four

DYNAMIC SYMMETRY PLATE 8



ROOT FOUR



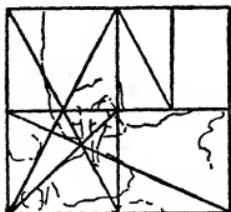
ROOT TWO



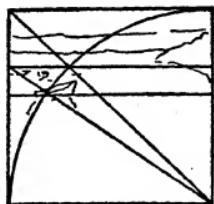
ROOT THREE



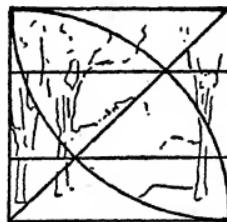
ROOT TWO



ROOT ONE



ROOT ONE

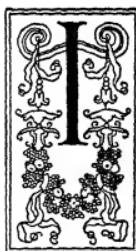


ROOT ONE

DYNAMIC LAYOUTS OF PHOTOGRAPH REPRODUCTIONS ON OPPOSITE PAGE

FIGURE 4

CHAPTER XV: COMPOSITION OF COLOUR AND FORM



HAVE treated this subject so thoroughly in *The Art of Colour* that it seems repetitious to give it again. Let me explain to you that the first thing to arrive at is to decide on what the dominant note will be in the picture, a tree, a house, the sky, or the ground. You can then make the colour composition around that particular object. In *The Art of Colour* you will see charts of two colours against one complementary. I coined the word *split* complementary and this term has been used by many painters and writers; or three colours against two complementaries or four colours against one complementary, etc., and if you wish the dominant note to stand out you will make it more brilliant and darker in shadows or going further toward the complementary in the shadows, making all the other colours less brilliant and the shadows not so contrasting. For example, if you had five colours with one complementary you could make the one complementary the brilliant note and all the other colours neutralized or paler in tone.

If you had two objects that you wished to bring out you would bring these two objects against the other masses, which would be in more neutralized tones or with more white.

If your picture is to be a tonality you can make all the objects except the principal object in the tonality that you decide on and the one dominant note in brilliant pure colours with more contrasting shadows.

Many colour combinations can be made. It is not necessary to copy the colours in nature if you know your colour theory. You can paint a picture in one colour and one complementary, two colours and two complementaries, three colours and three complementaries, four colours and four complementaries, five colours and five complementaries. You can make these in brilliants or in grays or in a combination of the two.

Then you have what I have named split complementary as I have mentioned above, such as one against two, two against three, three against four, four against five and five against six in grays or brilliants or a combination of the two.

Then you can have a picture in harmonies; a harmony of two,

three, four, five, or six. All of these are explained and illustrated in colour in *The Art of Colour*.

This gives you a very wide range for using your individual ideas, and if you are so-called modernist or surrealist you can make up combinations of colours which will be pleasing to the eye and which will be appreciated by other people besides yourself.

I have put into this chapter a few of the charts taken from *The Art of Composition, Simplified Application of Dynamic Symmetry*.

These apply to landscape composition and this form of composition is based on the Greek, which is adopted now by all great artists. If you wish to study composition from this angle I strongly advise you to get this book, from which the charts are taken.

The compositional forms in these charts give you the different routes, which means the different proportions of the height and the width, and also give you the first point, the principal points of interest, the secondary points of interest, etc. Also, they show you the lines to follow, more or less. It is not necessary to be a mechanic in painting but in selecting a landscape which you wish to portray you will be influenced in that selection by the forms of composition based on dynamic symmetry.

CHAPTER XVI: TREES AND THEIR CONSTRUCTION



THE first thing to study in drawing a tree is the way the trunk and branches grow in the different trees. I have, in "Lace of Spring," given you a few examples of the way the branches start out from the parent trunk and I also have shown in "Peter Pan" a few examples of the texture of the bark of trees.

Taking the oak, elm, maple, linden, and trees of that type the branches start out from the parent trunk always with a bracket below and a U shape on top. The branches never start out in a straight line and it is good to remember that all branches taper as they go out, getting smaller and smaller until we come to the small branch which holds the leaf or bud. Nature sometimes starts to grow a branch and through some misadventure stops its growth or changes its direction. You will notice that in the picture "Lace of Spring," very few branches go in a straight line.

Another thing you will see if you study closely is that the branches always come out from the bump; in other words, where the branches change their direction, so to speak, and never from the hollow, as you will note in the illustrations called "Peter Pan" and the "Lace of Spring." Also these branches come out from the parent trunk and from each of the larger branches alternately. That is, they will come out from different sides and at different spaces between the branches and never from the same plane. Also you will notice that these spaces become smaller as they go further up the tree. In other words, the lower branches have a wider space between each other and are larger in diameter than the branch further up.

The light coming through these branches rounds up the spaces and makes it appear more of a U shape than it actually is.

In the pine family very often the branches come out in the same plane and not alternately as in the oak, etc. You will most likely notice this in the Christmas tree.

In the spring the buds will show on the ends of the very small branches, and as the leaves burst forth they seem to form in layers or steps as if they were hands stretching forth to get the sunshine. The main thing to look for in painting a tree is to see the large dark masses which form a design against the light masses.

In putting in these masses in the cold colours first you will, of course, try to get the value whether it is in the foreground, middle distance, distance or far distance. The foreground will naturally show greater contrast. It is good to put an underlay of the cold colours thinly painted with the medium on the light side so that when you break in the warm colours it will give a vibration, scintillation, and variety, and suggest the small shadows even on the light side. I have endeavored to show some of the different trees and how they grow in various seasons of the year and perhaps these drawings are the best guide rather than words.

CHAPTER XVII: PAINTING MEDIUMS AND VARNISHES



HERE are many painting mediums on the market, some good, some bad. It is well, therefore, for the artist to know exactly what the composition of these mediums is and not take the colourmen's suggestion of what to use.

Siccative de Courtray or Siccative de Harlem is a very poor medium, and invariably will make the picture crack in years to come. Magilp is another one of these nostrums which should be avoided.

Rosin mediums are bad in any form. Remember there is quite a difference between rosin and resin. The former is a residue or hard gum taken from the pine tree, the source of turpentine and tar; the latter is a gum, natural or synthetic. Rosin makes a very good varnish for furniture if mixed with China oil, or as it is sometimes called, Chinese nut oil. As a matter of fact, this varnish has taken the place of copal varnish, but it should not be used in portrait painting.

Copal varnish is very apt to "bloom" when dried hard, and also to draw the paint from the canvas, thereby cracking it. Another disadvantage is that it cannot be removed by the restorer.

Demar varnish is good for certain purposes, such as flowing over a photographic plate to preserve the negative, or to blow on tempera. It is not so good for putting over an old painting, as it is very brittle and fugitive.

Amber varnish is a misnomer. It is not made from amber. It is generally a mixed varnish of copal.

Vibert, a French artist, invented a varnish which he claimed was a petroleum varnish. My laboratory tests show that it is made of gum mastic dissolved in oil of spike lavender with a coal-tar product known as benzol. Vibert also has made up a medium for mixing with pigments when painting. These are both very good. If the painting medium is used and afterward varnished lightly with the retouching varnish, as it is called, the paint will not crack. The advantage of using the retouching varnish of Vibert is that it can be blown by a mouth atomizer onto the paint immediately after finishing. I will give the formula of this retouching varnish and medium later in this chapter.

Shellac varnish should never be used on a painting in oil. It dries

very hard and draws the paint from the canvas or ground. This is because it is dissolved in alcohol, drying too quickly, and not mixing with the paint. However, shellac is mixed with alcohol, in a very dilute mixture, to make a fixatif that is blown onto charcoal drawings. I do not like to use this, however, because it prevents the paint from adhering closely to the painted ground. I much prefer a fixatif made of mastic varnish, turpentine, and oil of spike lavender in a very dilute mixture. Vibert's retouching varnish, very much diluted with turpentine, blown onto the drawing, makes a good fixatif. But it is much better not to use charcoal at all and draw the landscape in thin paint with turpentine. See "Autumn Landscape."

Mastic varnish is made from mastic gum. If the dissolving medium is turpentine, with a little oil of spike lavender added, it is a very safe varnish.

No picture should be thickly varnished until after the paint has been dried for a year and exposed to the rays of the sun before applying the varnish. Clean an old painting thoroughly with very little water only on a rag, and no soap. To remove grease or soot that cannot be taken off with a damp rag, use a very little turpentine to which a few drops of alcohol have been added. Great care, however, must be taken that very little is used so as not to raise the paint or glazes.

My formula for paint medium follows:

Poppy or linseed oil	100 c.c.
Turpentine	50 c.c.
Mastic varnish	100 c.c.
Benzol	50 c.c.
Oil of spike lavender (or Lavendine) ...	10 c.c.

If oil of spike lavender or benzol is not available, you can use $\frac{1}{3}$ poppy oil or linseed oil, $\frac{1}{3}$ mastic varnish, and $\frac{1}{3}$ turpentine.

If you wish the painting to dry quickly and to be tacky, leave out some of the oil. On the other hand, if you wish it to stay wet, as on the sky or distance, use more oil, leaving out some of the varnish and turpentine. In that case, the paint must be exposed to the sun for at least a day, as turpentine and mastic varnish dry from the action of the air when the turpentine evaporates. The oil dries by oxidization and must be exposed to the sun to get a quick drying. By changing the quantity of oil, varnish, and turpentine, any desired consistency can be arrived at.

My formula for varnish to be blown on with a mouth atomizer after the painting is completed is:

Mastic varnish (genuine)	100 c.c.
Benzol	200 c.c.
Oil of spike lavender (or Lavendine) . .	10 c.c.

My formula for a varnish to be put onto a painting, after it has been dried for a year is:

Mastic varnish	200 c.c.
Turpentine	100 c.c.

Another advantage of using gum mastic is that it can be rubbed off by the restorer and a new coat of varnish applied. The restorer, if he is very skillful, will use only his finger or thumb to powder off the mastic varnish. But if the picture is very dirty he will sometimes apply with cotton wool mixture of turpentine, alcohol, and water. This should only be attempted by one who has had experience in restoring pictures. It is a very delicate operation.

At times it is necessary to remove the shine from the picture, especially if it hangs facing the light. This can be done without injuring the painting by rubbing a little cottage cheese over the picture with the hands. I find that cottage cheese is much easier to use. The old masters used what corresponds to our regular store cheese.

This coating of casein, which is really the substance in the cheese, can later be removed if necessary with a rag moistened slightly with warm water.

CHAPTER XVIII: DICTIONARY OF COLOURS—THEIR PLACE IN THE SPECTRUM AND THEIR CHEMICAL COMPOSITIONS



HE following dictionary of colour has been compiled from knowledge gleaned from many sources, for ready reference. The chemical consistencies of each pigment have been compiled from the latest chemical researches and ancient data. The placing of the colours in their relative position on the Spectrum Chart has been done so that the artist or layman can understand how to mix them to get hues, tones, and tints; how to neutralize them with their complementary; to make colour combinations and their accepted psychological significance.

Many paints are named after the ancient colours which were not permanent which are now made permanent by using a different chemical, such as the madders, Indian yellow, lakes, etc.

DICTIONARY OF COLOURS

White

Its place in the spectrum and its complementary

Reflects all colours. If white light is decomposed it will separate into red, green, and violet rays.

History

In early times there were the following whites:

Flake White, which was made by the acid of grapes with lead.

White Lead, which was the rust of lead formed with vinegar.

Horn White, which was the earth calcined from horn.

Pearl White, which was the powder of pearl or fine parts of oyster shells.

Troy White, which was chalk neutralized by the addition of water in which alum was dissolved.

Eggshell White, which was powdered eggshells.

Chemical properties

The modern colourman makes the following:

Flake White, good for painting primer on canvas or painting ground. Foundation white, Cremnitz white, and flake white mixed with turpentine only are good for priming canvas or painting ground previous to painting on it as it gives a tooth on which subsequent painting will take hold.

New White is a mixture of zinc white and Cremnitz white. All mixtures of lead white and zinc white are more permanent than lead whites alone.

Silver White, *French White*, and *Blanc d'Argent* are all carbonates of lead. Less body than flake white but otherwise similar in their characteristics.

Zinc White, oxide of zinc. Present mode of manufacturing makes this a very pleasant white to handle. It has been improved upon within the last few years so that the working body is the same as lead white. It will mix with all pigments that are in themselves permanent and is much the safest white to use, unless some manufacturer will make a white of calcined horn, as the writer believes the ancients used.

Chinese White is another white that comes from zinc.

Permanent White or *Baryta White*, precipitated sulphate of barium, is not satisfactory because of its lack of opacity.

Winton White, a combination of lead and zinc white, is permanent and very pleasant to work with.

Hamburg White is a mixture of two thirds barium sulphate and one third white lead. It is permanent but is apt to become transparent.

Cremnitz White is similar to flake white. Inferior in body though superior in whiteness.

Dutch White contains one fourth white lead and three fourths barium sulphate. It is permanent and good for priming canvas.

Permalba. This is a new white made by Weber & Company which is made approximately of 25% titanium dioxide and 75% precipitated barium sulphate.

White Lead, which is carbonate and hydrate of lead, is very much used by modern printers. It has a tendency to become yellow or brown with age or exposure to sulphur fumes. It undergoes a gradual loss of opacity. Not good to mix with many other

colours, such as vermillion, chrome, or cobalt. White lead is sometimes known as flake white.

Psychology

It is the symbol of purity and sacrifice to the Occidental; a sign of mourning to some Orientals, such as the Javanese and Koreans.

REDS

Vermilion or Cinnabar

Its place in the spectrum and its complementary

Reflects the red rays of the spectrum. There are slightly different hues, some more toward the orange, and others more toward the scarlet. Chinese vermillion is scarlet in hue; English vermillion has an orange hue; and French vermillion is the true red of the spectrum. It is claimed by the Chinese to be found in natural state. It can be imitated to a more or less brilliant degree by the mixture of crimson and yellow, or orange, chrome, and alizarin crimson, but no mixture of two colours can equal the brilliancy of vermillion itself. French vermillion is one of the primaries of the spectrum as near as the colourman has been able to make. Its complementary is blue.

History

It is a very ancient colour and was used by the sixteenth-century painters as a ground on which to glaze other colours. It has been used by the Chinese for centuries.

Chemical properties

If it is pure it is made of sulphide of mercury, which is sulphur and quicksilver. There is also black sulphide of mercury known as æthiopic mineralis. Vermilion is a permanent colour; is not good to use in fired enamel because it is volatile. Not good to mix with white lead, as the sulphur and lead combine in time to make a dark mud colour.

Psychology

It is the symbol of war, passion, danger, and courage.

Orange-Vermilion

Its place in the spectrum and its complementary

It is a bright red-orange very nearly the colour of orange in the Spectrum Chart. Mixtures can be made as with vermillion. Its complementary is a slightly violet-blue.

History

Same as vermillion.

Chemical properties

Same as vermillion.

Psychology

Is a symbol of glory, heat, laughter, harvest, and plenty, autumn, happiness, and warmth.

Field's Orange-Vermilion

Its place in the spectrum and its complementary

The same as orange-vermillion, a little more brilliant but not so opaque.

History

See vermillion.

Chemical properties

Same as vermillion.

Psychology

Same as vermillion.

Light Red*Its place in the spectrum and its complementary*

It is a neutralized red and can be mixed with vermillion with a little blue and white, or crimson, yellow, blue, and white.

History

See Venetian red.

Chemical properties

It is an oxide of iron or ochrous earth, and is permanent.

Psychology

The same as red only in a milder degree on account of its neutralization.

Venetian Red, Terra Rosa, or Light Red*Its place in the spectrum and its complementary*

It is a neutralized scarlet. Its complementary is blue-green. It can be mixed with crimson and yellow and neutralized with émeraude green.

History

A very ancient colour used for underpainting especially by the northern Italians in the sixteenth and seventeenth centuries. The picture was painted in monochrome of this colour. Perhaps this is the reason why some of these pictures get brown in later years, as the underground always works up to the surface.

Chemical properties

Venetian red is an oxide of iron; is permanent.

Psychology

Same as red.

Indian Red*Its place in the spectrum and its complementary*

It is a neutralized scarlet and can be made from a mixture of alizarin crimson and a little yellow or vermillion and crimson, or crimson and orange—each combination being neutralized with blue-green. Its complementary is blue-green.

History

A very old pigment. See Venetian red.

Chemical properties

Indian red is an oxide of iron. It is very strong and will work through the other colours. It is permanent, but when used on the palette it modifies all colours.

Psychology

Same as scarlet.

Crimson Lake*Its place in the spectrum, and its complementary*

Is a crimson tending slightly toward purple. Its complementary is green tending slightly toward yellow-green.

History

It is an ancient colour but was found by the old masters to vary greatly in its value in regard to permanency, some standing well as a glaze, others made in the same way being fugitive.

Chemical properties

At present this colour is made with alizarin crimson instead of as was formerly done with cochineal bugs the same as carmine.

Psychology

Denotes beauty, glory, courteousness, and generosity.

Harrison Red*Its place in the spectrum, and its complementary*

It is a scarlet. Its complementary is a blue-green.

History

This is a new combination of pigments, and its permanency is considered good, but as it has been used for a very few years, what it will be after being painted many years is impossible to tell.

Chemical properties

A semi-transparent lake colour of scarlet hue, made from a product of the modern dye industry. Unsafe in mixtures with certain metallic pigments and ochrous earths, as this colour dries exceptionally slowly, taking perhaps one, two, or three weeks to dry, and in the drying it throws off oil into other colours surrounding it, changing their colour by the addition of oil—therefore it is not recommended.

Psychology

Denotes blood, anger, beauty, glory.

Scarlet Lake*Its place in the spectrum, and its complementary*

Is a modified crimson alizarin; semi-transparent. Its complementary is blue-green.

History

See alizarin crimson, of which it is now made.

Chemical properties

Less permanent than either of its components. Harrison red is now used for this colour, but it dries very poorly and takes about six weeks sometimes to dry.

Psychology

Denotes blood and anger.

Permanent Crimson or Alizarin Crimson*Its place in the spectrum and its complementary*

Is the true crimson in the spectrum. Red light and violet light will produce crimson light. Its complementary is emerald green.

History

A modern discovery of Dr. Caro of Mannheim.

Chemical properties

Perfectly permanent under all conditions, it is very powerful, and for that reason many artists prefer the diluted colour such as the madders which are now made from alizarin. It is the only coal tar colour which is really permanent.

Psychology

It symbolizes beauty, glory, and generosity.

Madder Lakes and Alizarin Lakes*Their place in the spectrum and their complementary*

They are crimson, slightly scarlet. Their complementary is émeraude green.

History

See alizarin crimson.

Chemical properties

The madder lakes are the most permanent of the rich red lakes. These pigments were obtained by precipitating colouring matter extracted from the root of the *Rubia tinctorum* plant on an aluminum or tin base, but now generally made from alizarin.

Psychology

Same as crimson.

Madder Carmine*Its place in the spectrum and its complementary*

It is crimson; its complementary is green.

History

A very old dye. See Crimson Lake.

Chemical properties

Madder carmine is the richest of the lakes and is the only comparatively durable carmine if made with alizarin, but if made with the cochineal bug not so durable.

Psychology

Denotes bloodshed and anger.

Rose Madder*Its place in the spectrum and its complementary*

It is a pale crimson, slightly scarlet. Its complementary is green, slightly blue-green.

Pink madder and madder lake are other names for rose madder.

History

See other Madders.

Chemical properties, whether permanent or not.

See other madders and alizarin crimson of which it is now made.

Psychology

Signifies anger and bloodshed.

YELLOWS

Yellow Ochre*Its place in the spectrum and its complementary*

Is a neutralized yellow-orange. Its complementary is blue-violet, more violet than blue.

Native and Roman ochre, burnt and brown ochres, transparent golden ochre are only fancy names for varieties of yellow ochre, the tints and methods of production varying slightly.

History

One of the oldest colours used.

Chemical properties

Yellow ochre is a native oxide of iron and is permanent. It can be mixed with yellow and orange, yellow and red, or yellow and crimson—each combination neutralized by blue-violet and white added. Native and Roman ochre, burnt and brown ochres, transparent golden ochre are all permanent oxides of iron. When the ochre is burnt and turns more red it becomes a neutralized orange or neutralized red and gets its psychological properties from the colour it most resembles.

Psychology

As it is more yellow than orange it signifies decay, deceit, indecency, inconsistency, and sickness. The orange gives a slight suggestion of plenty and harvest.

Raw Sienna*Its place in the spectrum and its complementary*

Is a grayed-yellow-orange the same as yellow ochre. Its complementary is blue-violet, more violet than blue.

Chemical properties

It is ferrous hydroxide of iron and clay. It is permanent, and is nearly transparent, similar to golden ochre.

Psychology

Same as yellow ochre.

Burnt Sienna*Its place in the spectrum and its complementary*

It is a neutralized red and can be mixed from crimson and yellow or vermillion neutralized by its complementary, blue.

Chemical properties

It is raw sienna calcined. This earth dries badly in oil and cracks if the picture is varnished too soon. As it can be mixed with the colours of the regular palette there is no use having it, especially as the artist is apt to use it in any and all kinds of mixtures, making the picture all "Brown Sauce."

Psychology

Symbolizes in a modified degree war, passion, danger, and courage.

Vandyke Brown*Its place in the spectrum and its complementary*

It is a neutralized orange. Can be mixed with orange neutralized with its complementary, blue-violet.

History

A very old colour.

Chemical properties

It is a brown earth, but does not dry well; in fact, the writer believes it cracks very badly if varnished before the picture has been dry for a year or so

Psychology

Same as orange only very weak in its effect because of its deep neutralization.

Cassel Brown*Their place in the spectrum and their complementary*

Is a neutralized orange. Its complementary is blue-violet.

Chemical properties

An earth which differs from Vandyke brown only in tint and name.

Psychology

Same as Vandyke brown.

Indian Brown and Cologne Earth*Their place in the spectrum and their complementary*

Are more neutralized than Vandyke brown. Complementary is blue-violet.

History

Ancient colours.

Chemical properties

Cologne earth is a fossil substance. Very good for making illustrations for reproductions as the camera photographs a deep rich shadow, and the high-lights look bluish when this colour is mixed with any white, especially zinc white.

Psychology

Same as Vandyke brown.

Cappagh Brown*Its place in the spectrum and its complementary*

Is a neutralized orange made by the admixture of blue-violet and orange. Its complementary is blue-violet.

History

An ancient colour.

Chemical properties

It is a combination of oxides of iron and manganese; fairly permanent.

Psychology

Denotes warmth, plenty, contentment, and harvest.

Verona Brown*Its place in the spectrum and its complementary*

Is a yellow-orange neutralized with violet-blue-violet. Its complementary is violet-blue-violet.

History

An old colour.

Chemical properties

Is obtained by calcining the native earth (terre verte); consists chiefly of magnesium silicate coloured with oxide of iron; fairly permanent.

Psychology

Being more orange than yellow it symbolizes warmth, plenty, and contentment in a lesser degree than Cappagh brown.

Raw Umber*Its place in the spectrum and its complementary*

It is a yellow-orange more neutralized than Verona brown. Its complementary is violet-blue-violet.

History

A very old colour.

Chemical properties

It is a compound of iron and silicate, an ochrous earth. Permanent under all conditions. It has a good drying quality, better than other ochrous colours.

Psychology

Same as Verona brown.

Burnt Umber*Its place in the spectrum and its complementary*

It is a neutralized orange a bit redder than Cappagh brown. Its complementary is blue-violet. It can be mixed with red and a little light ultramarine.

History

A very old pigment.

Chemical properties

It is the raw umber calcined.

Psychology

Signifies happiness, contentment, warmth, plenty, and harvest.

Caledonian Brown*Its place in the spectrum and its complementary*

It is a neutralized reddish orange. Its complementary is blue-violet. Can be mixed with red and green.

Chemical properties

It is a useful colour, made by mixing two brown earths, and is therefore reliable.

Psychology

Signifies happiness, contentment, warmth, plenty, and harvest.

Bone Brown and Mummy Brown*Their place in the spectrum and their complementary*

They are a highly neutralized orange. They are complementary to blue-violet. Can be mixed with orange and blue-violet.

History

Very old colours.

Chemical properties

They are of organic origin. The first is obtained by a particular calcination of bones, while the latter is actually the ground-up body of a mummy. Both are bad driers in oil, and not particularly desirable.

Psychology

Same as orange.

Brown Madder*Its place in the spectrum and its complementary*

It is scarlet neutralized with blue-green. Its complementary is blue-green.

History

An ancient colour.

Chemical properties

Formerly made from the madder root. It has been proved to be impermanent by official trial. Can be made with alizarin crimson, barium yellow, and blue ultramarine, which would then be permanent.

Psychology

To a very limited extent it expresses rest and studiousness.

Brown-Pink*Its place in the spectrum and its complementary*

It is a neutralized orange. Its complementary is blue-violet.

History

A comparatively modern colour.

Chemical properties

It is obtained from the *quercus nigra* (*quercitron*) bark. Not permanent.

Psychology

Symbolizes the same as orange.

Italian Pink*Its place in the spectrum and its complementary*

It is an orange-yellow, not pink at all. Its complementary is a slightly blue-violet.

History

A comparatively modern colour.

Chemical properties

It is made of *quercus nigra* bark. Not permanent.

Psychology

Being more yellow than orange it symbolizes the psychological properties of yellow: cowardice, indecency, decay, deceit, inconsistency, and sickness.

Yellow Lake*Its place in the spectrum and its complementary*

It is yellow with just a small amount of orange. Its complementary is violet.

History

A comparatively modern colour.

Chemical properties

It is a colour of vegetable extraction; not permanent.

Psychology

It has the psychological properties of yellow.

Asphaltum or Bitumen*Its place in the spectrum and its complementary*

Its colour is a neutralized yellow-orange. It can be mixed with orange with a little yellow neutralized with blue-violet. A slightly violet-blue-violet is its complementary.

History

A very old paint, and the cause of much of the "Brown Sauce" of some of the old masters.

Chemical properties

It is a natural pitch, unchangeable in colour but affected by the temperature so that it runs on the canvas in warm weather.

Psychology

Same as orange.

Lemon Yellow or Barium or Zinc Yellow*Its place in the spectrum and its complementary*

It is a pale yellow with a greenish tinge. It can be made from the mixture of chrome yellow, a very small amount of yellow-green, and white. Its complementary is violet with a very small amount of crimson added.

History

A comparatively modern colour.

Chemical properties

This colour when compounded from zinc yellow or barium salts is permanent. Also pale cadmium or daffodil yellow is, to all intents, permanent.

Psychology

Denotes cowardice, indecency, decay, deceit, inconsistency, and sickness.

Strontium Yellow*Its place in the spectrum and its complementary*

Is slightly greened yellow with violet slightly purple for its complementary.

History

A modern colour.

Chemical properties

It is a chromate of strontium. It is more brilliant than but inferior in permanency to lemon-yellow.

Psychology

Same as yellow.

King's Yellow or Orpiment*Its place in the spectrum and its complementary*

It is almost the true spectrum yellow in colour. Its complementary is violet.

History

A very ancient colour.

Chemical properties

It is made of sulphide of arsenic and is a deadly poison. It is not permanent.

Psychology

Symbolizes same as yellow.

Cadmium Yellow; pale or Daffodil Yellow*Its place in the spectrum and its complementary*

It is yellow, very slightly orange. Its complementary is violet.

History

A modern colour.

Chemical properties

It is a sulphide of cadmium and because of the sulphur in its composition it is not permanent in mixtures that are affected by sulphur (lead chromes, white lead, etc.) Not reliable only on account of manufacturers not being careful in using an oil in which acid has been the bleaching agent. Also made by mixture of cadmium, middle, and chromate of zinc.

Psychology

Same as yellow.

Cadmium Yellow (middle)*Its place in the spectrum and its complementary*

It is an orange-yellow. Its complementary is violet with a very small amount of blue-violet added.

History

A modern colour.

Chemical properties

It is sulphide of cadmium and is more orange than pale cadmium yellow. See pale cadmium.

Psychology

Same as yellow-orange.

Cadmium Orange (deep)*Its place in the spectrum and its complementary*

It is a yellow-orange. Its complementary is violet, slightly more blue-violet on account of the orange tone. It will not make a brilliant green.

History

A modern colour.

Chemical properties

It is made of sulphide of cadmium. A permanent colour except in lead mixtures. See pale Cadmium.

Psychology

Tending more toward orange than toward yellow, it symbolizes warmth, laughter, and plenty.

Chrome Yellow (pale)*Its place in the spectrum and its complementary*

It is yellow with a small amount of white. Its complementary is violet.

Chemical properties

It is a chromate of lead and other lead salts of a lemon hue; good covering power but not permanent. This pale chrome is not nearly as permanent as the deeper shades. In water colours it is too opaque for use with transparent colours.

Psychology

Denotes same as yellow.

Chrome Yellows, Middle and Deep, and Orange*Their place in the spectrum and their complementary*

Are similar gradations to cadmium yellow. Their complementary is violet going toward blue-violet as the chromes deepen.

History

A comparatively modern colour.

Chemical properties

They are liable to be decomposed by chemical reactions occurring in mixtures, but when mixed with an oleoresinous medium (varnish) they will probably be permanent under all conditions. With the palette suggested in the first part of this chapter these chromes will stand indefinitely if a varnish medium is used.

Psychology

They denote the same as yellow for the chrome yellows, and as orange for the chrome oranges.

Aureolin*Its place in the spectrum and its complementary*

It is a true yellow. Violet is its complementary.

Chemical properties

It is composed of the nitrates of cobalt and potassium. It is permanent, and safer than gamboge or Indian yellow.

Psychology

Denotes cowardice, indecency, decay, deceit, inconsistency, sickness, sunlight, and brightness.

Gamboge*Its place in the spectrum and its complementary*

It is yellow with a touch of orange added. Its complementary is violet with a very small amount of blue-violet mixed with it.

History

A very ancient colour, formerly brought by camels from the East.

Chemical properties

It is a kind of resinous material better in water than in oils. Not permanent.

Psychology

Means, in a slightly modified degree, the same as yellow.

Indian Yellow*Its place in the spectrum and its complementary*

It is very much like gamboge in colour and can be made from the addition of a small amount of orange to yellow. Its complementary is violet with a tinge of blue-violet.

History

Formerly known to the old masters as gallstone; it was made from bile of oxen.

Chemical properties

If made from animal excrement substances, as was formerly done, it is not permanent, but if made from bichromate of potassium it is fairly permanent. Also made of naphthol yellows.

Psychology

Same as yellow-orange.

Naples Yellow*Its place in the spectrum and its complementary*

A light orange-yellow. Its complementary is violet with some blue-violet.

Chemical properties

Naples yellow in pure form is made of lead antimoniate, but as this is not permanent, a mixture of cadmium yellow and zinc white is invariably substituted. The colour can be made by a mixture of yellow, orange, and white.

Psychology

Same as yellow and orange.

GREENS**Emerald Green***Its place in the spectrum and its complementary*

It is the lightest and most brilliant green. Its colour is nearly the true green of the spectrum. Crimson is its complementary.

History

It has been used for many centuries. The old Italian masters used it, but only in varnish painting, which protects it from the air; used in this way will change but very little if not mixed with any other colour.

Chemical properties

It is composed of arsenic, copper, and acetic acid. It is not permanent in mixtures.

Psychology

Denotes victory, contemplation, immortality, and faith.

Malachite Green*Its place in the spectrum and its complementary*

It is a slightly neutralized green. Its complementary is crimson. It can be made with émeraude, a little yellow, and white.

History

Supposed to be, in the ancient times, ground stone called malachite.

Chemical properties

It is obtained from the mineral malachite.

Psychology

It denotes victory, faith, immortality, and contemplation

Verdigris*Its place in the spectrum and its complementary*

Its colour is green with a little yellow-green and white added. Its complementary is crimson with a bit of purple added.

History

A very ancient colour, but never found to be permanent.

Chemical properties

It is compounded from acetic acid and copper. It is fugitive and liable to change more than those greens first mentioned.

Psychology

Same as green.

Olive Green*Its place in the spectrum and its complementary*

It is a colour between yellow and yellow-green neutralized a little. Its complementary is a colour between violet and purple.

Chemical properties

It is a mixture of yellow and blue pigments; dependable on its brilliancy as to what colours it is made of.

Psychology

So strongly yellow it partakes in a modified degree of the psychological meaning of yellow.

Olive Lake*Its place in the spectrum and its complementary*

It is a neutralized yellow-green. Its complementary is purple.

History

See other lakes.

Chemical properties

It is a mixture of yellow and blue pigments and is not dependable.

Psychology

It symbolizes youth, cheerfulness, peace, faith, and springtime.

Chrome Green 1*Its place in the spectrum and its complementary*

It is a yellow-green; purple is its complementary. It is used a great deal by house painters, and the colours that it makes in later years are sometimes interesting to give an antique effect.

History

A modern colour.

Chemical properties

It is a double precipitate of chrome yellow and Prussian blue, and on account of the impermanency of Prussian blue turns black in the course of years. For the artist this colour is not necessary, as the real chromium green, known as émeraude or viridian, takes its place, and is permanent.

Psychology

It symbolizes youth, cheerfulness, peace, and faith.

Chrome Green 2*Its place in the spectrum and its complementary*

It is a trifle bluer than green. Its complementary is crimson with a touch of scarlet added.

Chemical properties

Same as Chrome Green 1.

Psychology

It signifies faith, immortality, and contemplation.

Chrome Green 3*Its place in the spectrum and its complementary*

It is blue-green. Its complementary is scarlet.

Chemical properties

Same as Chrome Green 1.

Psychology

Denotes semi-mystery, song, poetry, and high thinking.

Green Oxide of Chromium, Émeraude*Its place in the spectrum and its complementary*

It is a colour between green and blue-green, just a shade neutralized. Its complementary

lies between crimson and scarlet.

Chemical properties

Unalterable under all conditions; mixes well with white. It will stand the fiercest heat unchanged. It is a chromium oxide.

Psychology

Denotes faith, immortality, and contemplation; also mystery, poetry, and song.

Veronese Green or Viridian

Its place in the spectrum and its complementary

In France it is known as vert émeraude (émeraude green). It is a blue-green not quite as blue as Chrome Green 3. Its complementary is scarlet with a little of crimson.

History

A comparatively new colour to the artist's palette, mistaken by one noted chemist of artists' colours for the same as emerald green which is an entirely different thing; this colour has taken the place of green ultramarine.

Chemical Properties

It is a brilliant hydrated oxide of chromium. It is perfectly permanent and very useful, particularly to make a very near approach to the brilliancy of emerald green by mixing with zinc yellow and white.

Psychology

It symbolizes semi-mystery, song, poetry, and high thinking.

Terre Vert

Its place in the spectrum and its complementary

It is a neutralized green mixed with white. Its complementary is crimson.

History

A very ancient colour used in olden times as a body colour on which to glaze the more brilliant.

Chemical properties

It is a sober green earth or ochre, thoroughly permanent. It can be made with émeraude green with a little crimson and white.

Psychology

Signifies same as green in a minor tone.

BLUES

Prussian Blue

Its place in the spectrum and its complementary

It is a deep tone of blue. Its complementary is vermillion. Sometimes nearly green-blue, and at other times blue-violet.

History

Used in the sixteenth century and never considered permanent, but on account of the high price of ultramarine in those days it was substituted for that colour.

Chemical properties

It is a ferri ferro cyanide of iron. It is unsafe as it turns itself and other colours green. A very powerful colour, and if used for house decorating will turn quickly to all shades of blue and green, which gives a very beautiful antique look to shutters, doors, etc.

Psychology

Denotes coldness, spirituality, severity, mystery, and truth.

Chinese Blue*Its place in the spectrum and its complementary*

Also called Antwerp blue. Chinese blue has a little blue-green mixed with it. Its complementary is vermillion with a small amount of scarlet.

History

A modern colour, which does not come from China.

Chemical properties

Same as Prussian blue. It is unsafe as it turns itself and other colours green. If mixed with lead white it turns a neutralized yellow-green; if mixed with blue-black, it turns brown in time.

Psychology

Denotes coldness, spirituality, severity, mystery, and truth.

Indigo*Its place in the spectrum and its complementary*

It is a blue neutralized by vermillion. Vermilion is its complementary.

History

As a dye a very ancient colour.

Chemical properties

Indigo is a vegetable blue obtained by macerating the Indigofera plant in water. It fades under exposure to light.

Psychology

Same as Prussian blue.

Intense Blue*Its place in the spectrum and its complementary*

It is a deeper toned variety of indigo blue.

History

Same as indigo.

Chemical properties

Same as indigo.

Psychology

Same as Prussian blue.

Cobalt Blue*Its place in the spectrum and its complementary*

Its colour is the true blue. Its complementary is vermillion.

History

Used as an underpainting in the sixteenth century.

Chemical properties

Cobalt blue is a combination of a salt of the metal cobalt with alumina. It is thoroughly reliable, but is now imitated by light ultramarine mixed with white which is sold for a high price, whereas ultramarine is much cheaper. The so-called cobalt should be cheaper than ultramarine.

Psychology

Signifies coldness, spirituality, severity, mystery, and truth.

Azure Blue*Its place in the spectrum and its complementary*

It is a lighter variety of cobalt blue.

History

Same as cobalt blue.

Chemical properties

Same as cobalt blue.

Psychology

Same as cobalt blue.

Smalt*Its place in the spectrum and its complementary*

In colour it is blue-violet. Its complementary is yellow-orange.

History

A very ancient colour used to get a shiny surface by dusting on wet paint.

Chemical properties

Smalt is made from cobalt and is a vitreous compound. It is not considered permanent and is unpleasant to work with, but can be used for painting on glass if burnt in. It is not generally known, but ancient stained glass was sometimes made with this colour, and it was guarded by the Saxons from being carried out of the country.

Psychology

Same as ultramarine.

Cyanine or Leitch's Blue*Its place in the spectrum and its complementary*

It is deep cobalt blue in colour, and its complementary is vermillion.

History

Modern colour.

Chemical properties

Cyanine or Leitch's blue is a mixture of cobalt and Prussian blues. The cobalt part alone is permanent.

Psychology

Signifies coldness, spirituality, serenity, mystery, and truth.

Ultramarine Blue*Its place in the spectrum and its complementary*

In colour it is blue-violet, slightly more blue—although ultramarine blue can be made violet to blue-green. Its complementary is orange. The “light ultramarine” is a *true* blue, a deeper colour than cobalt, which can be made by the addition of white.

History

The genuine ultramarine has been used since ancient times, but in 1826 J. B. Guimet of Lyons succeeded in making it artificially.

Chemical properties

Genuine ultramarine blue is made of *lapis lazuli* by an elaborate process and is therefore costly, but to-day the ultramarine sold is made artificially, which is practically the same as the genuine, just as permanent, and almost as brilliant.

Psychology

It is supposed to signify the ocean.

French Ultramarine*Its place in the spectrum and its complementary*

Permanent blue, new blue, French blue, and light ultramarine are shades of French ultramarine.

History

Same as ultramarine.

Chemical properties

It is, roughly, a combination of alumina, silica, soda, and sulphur.

Psychology

Same as ultramarine blue.

Ultramarine ash*Its place in the spectrum and its complementary*

It is slightly neutralized blue-violet with white and a very small amount of orange. Its complementary is orange. Can be made with ultramarine blue mixed with orange and white.

History

An ancient colour.

Chemical properties

Ultramarine ash is supposed to be made from the refuse of genuine ultramarine. It is permanent.

Psychology

Same as ultramarine blue.

Coelin Blue or Cœruleum*Its place in the spectrum and its complementary*

It is a colour between blue and blue-green with a complementary between vermillion and scarlet.

History

It is a very ancient colour and was used by the sixteenth-century painters as an under-ground on which they painted transparent blues.

Chemical properties

It is a combination of the oxides of cobalt and tin with silica. It is semi-opaque and permanent. At the present time much of the ceruleum is made of light ultramarine and zinc yellow.

Psychology

Same as blue.

Permanent Mauve*Its place in the spectrum and its complementary*

It is a variety of French ultramarine. Its colour is violet. Yellow is its complementary. Permanent mauve, mineral violet, and permanent violet are all varieties of French ultramarine.

History

A modern colour.

Chemical properties

If this colour is made of ultramarine it is perfectly safe, but if made by the method of making mauve it is absolutely impermanent. The method of making ultramarine mauve is that when the ultramarine chemicals are heated they are allowed to cool very slowly—the more slowly they cool the more violet or purple will the result be.

Psychology

It signifies sadness, piety, sentimentality, royalty, and wealth.

Cobalt violet*Its place in the spectrum and its complementary*

It is a purple colour, very brilliant, and has the power to show under artificial light a little more toward the crimson than in the daylight. Its complementary is yellow-green.

History

Has been known for about a hundred years.

Chemical properties

It is a chemical precipitate made with phosphate of cobalt. It has the same semi-transparency of cobalt blue and is not absolutely permanent unless locked up in a varnish medium.

Psychology

Denotes royalty, richness, and wealth.

Neutral Tint*Its place in the spectrum and its complementary*

It is a highly neutralized blue-violet. Its complementary is highly neutralized orange.

Chemical properties

Neutral tint is a compound colour of no permanence. This colour can be made with a mixture of any two complementary colours and can be made permanent by this method.

The mixture of blue-violet with a little orange and white will give a perfect neutral and will be permanent.

Psychology

Denotes quietness, piety, and calmness.

GRAYS AND BLACKS

Payne's Gray

Its place in the spectrum and its complementary

It is a highly neutralized blue. Its complementary is red.

History

A modern colour.

Chemical properties

Payne's Gray in water colours is not permanent under exposure; but if made with light ultramarine blue and vermillion is permanent in oil.

Psychology

Denotes same as mineral gray.

Mineral Gray

Its place in the spectrum and its complementary

It is a neutralized blue. It can be made with light ultramarine, French vermillion, and white. Its complementary is red.

History

A modern colour, very expensive, but not at all necessary as it can be made as above.

Chemical properties

Mineral gray is made of the residue of lapis lazuli obtained from the making of ultramarine ash and gang rock. It is permanent. This is now made from the by-product in the making of an artificial ultramarine.

Psychology

Denotes coolness, calm, and quietness.

Lamp Black

Its place in the spectrum

In colour it is bluish neutral, and can be made from blue and vermillion. If this colour is used on the artist's palette and mixed with red to make a dark red it will make a dark purple instead. If mixed with yellow to make dark yellow it will make a green instead. It is good for house painters to use this colour, as they can mix large quantities at one time and add other colours to get the desired hue, but it is not good to use as a universal medium of darkening all colours as it will change the hue besides the tone.

History

An ancient colour.

Chemical properties

Lamp black is the soot of resinous matter and consists chiefly of carbon. It is permanent but dries badly in oil.

Psychology

Sign of mourning to the Occidental; sorrow; despair.

Blue-Black*Its place in the spectrum*

Its colour is a bluish neutral and can be reproduced from the mixture of blue and vermillion.

History

An ancient paint

Chemical properties

It is made from wood charcoal. It is permanent but a bad drier in oil.

Psychology

Same as ivory black.

Ivory Black*Its place in the spectrum*

In colour it is a neutral made from blue and vermillion. It is perhaps the blackest of all of the blacks, especially in a north or blue-white light, but in a warm light it is not so dark.

History

It is a very ancient colour, and in the sixteenth century it was made in a blue-black colour.

Chemical properties

Ivory black is calcined ivory, ground, and mixed as a paint. It is permanent but dries very slowly in oil. The writer believes this is the cause of cracking in many pictures.

Psychology

Denotes sorrow, death, and despair.

Black Lead*Its place in the spectrum*

It is a dark neutral having a somewhat metallic surface.

History

An ancient colour.

Chemical properties

Black lead is a permanent pigment of a dull black hue. It is manufactured from carbon in the form of graphite. So-called lead pencils are black lead. Is found in native state.

Psychology

Same as ivory black.

EXERCISES IN COLOUR

Exercises have been planned with the object of teaching this system of colour perception and execution. The lessons are so arranged that by progressive exercises the student is able to adapt the knowledge gained for use in portrait painting, figure painting, landscape painting, interior decoration, costume design, poster, batik, stage design, textiles, and other arts.

These exercises also teach the student something of design which is so important to modern portrait and landscape painters.

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